TECHNICAL INFORMATION
W1900 Series Clothes Washers

© 2007 Miele USA

W1900 Series Clothes Washers - Table of Contents

1.0 Construction and Design 6
1.1 Appliance Overview 6
1.2 Overview of Controls 7
1.3 Technical Data 11
1.4 Dispenser Assembly 13
1.5 Layout of Electrical Components W1903, W1918, W1926 & W1930 15
1.6 Layout of Electrical Components W1966 & W1986 16

2.0 Installation 17
2.1 Electrical Requirements 17
2.2 Plumbing Requirements 18
2.3 Installation Procedure 19

3.0 Commission and Operation 23
3.1 General Operation 23
3.2 Additional Function Pushbuttons 23

4.0 Description of Function 25
4.1 Casing Assembly 25
4.2 Electro-Mechanical Door Lock 25
4.3 Miele Eco Wash System 26
4.4 Drum Suspension 27
4.5 Heating Circuit Information 28
4.6 Water Level Switch 29
4.7 Water Control System – Intake 29
4.8 Water Control System – Rinses 30
4.9 Inlet Hose(s) Filters 30
4.10 Inlet Valves 30
4.11 Dispenser Assembly 30
4.12 Non-Return Valve & Drain Venting 31
4.13 Main Motor 32
4.14 Motor Speed Control 32
4.15 Tachogenerator 32
4.16 Imbalance Monitoring 33
4.17 Motor Circuit 33
4.18 Program Control 34
4.19 Heater Relays 34

5.0 Service and Maintenance 35
5.1 Dispenser Drawer – Removal 35
5.2 Appliance Lid – Removal 36
5.3 Front Service Panel – Access 36
5.4 Door Seal – Replacement 37
5.5 Air Trap – Replacement 38
5.6 Heater Element(s) – Replacement 39

W1900 Series Clothes Washers - Table of Contents (continued)

5.7 Inlet Valve – Replacement 39
5.8 Manual Draining and Filter Removal 40
5.9 Drain Pump - Replacement 41
5.10 Main Motor – Carbon Brush Replacement 42
5.11 Control Electronic – Removal 43
5.12 Power Supply Electronic - Removal 44
5.13 Determining Which Electronic Requires Replacement (Electronic Test Procedure) 45
5.14 Water Level Switch - Replacement 47
5.15 Heater Relays - Access 48

6.0 Fault Diagnosis 49
6.1 Service Mode - W1903, W1918, W1926 & W1930 49
6.2 Service Mode - W1966 and W1986 50
6.3 Fault Codes 51
6.3.1 Fault Code – Definitions (W1966 & W1986 Only) 52
6.4 Programming Mode 54
6.5 Description of Programmable Options 57
6.6 Special Features 61
6.6.1 Electronic Program Lock 61
6.6.2 Child Safety Lock 61
6.6.3 Demonstration Mode 62
6.7 Fault Indicators 63
6.8 Porthole Door is locked / unable to access service door 67
6.9 Customer reports water leaks from front left side of the appliance. 67
6.10 W1966 & W1986 not functioning correctly, after Control Electronic Replacement 67
6.11 W1900 series not functioning correctly, after Control Electronic Replacement 68

W1900 Series Clothes Washers – List of Figures

Figure 1-1: Appliance Overview (typical W1900 series washer) 6
Figure 1-2: Overview of Controls (W1903 & W1918) 7
Figure 1-3: Overview of Controls (W1926 & W1930) 8
Figure 1-4: Overview of Controls (W1966) 9
Figure 1-5: Overview of Controls (W1986) 10
Figure 1-6: 5 Kilogram Dispenser (W1903, W1918, W1930 & W1930i) 13
Figure 1-7: 6 Kilogram Dispenser (W1966 & 1986) 14
Figure 1-8: Overview of Components (W1903, W1918, W1930 & W1926) 15
Figure 1-9: Overview of Components (W1966 & W1986) 16

Figure 2-1: Turning the left Shipping Strut counterclockwise. 19
Figure 2-2: Turning the right Shipping Strut clockwise 19
Figure 2-3: Removing the Strut Support Assembly. 20
Figure 2-4: Plugging the Shipping Strut Holes. 20
Figure 2-5: Adjusting the legs to level the appliance 21

Figure 4-1: Eco Wash System 26
Figure 4-2: Drum Suspension Components 27
Figure 4-3: Increased in water volume = increased pressure against the Level Switch. 29
Figure 4-4: Dispenser Assembly 30
Figure 4-5: Non-return valve 31
Figure 4-6: Main Motor Assembly 32
Figure 4-7: Motor circuit 33

Figure 5-1: Removing the dispenser drawer 35
Figure 5-2: Service Access 36
Figure 5-3: Replacing the door seal 37
Figure 5-4: Air Trap and Level Switch Components 38
Figure 5-5: Heater Element 39
Figure 5-6: Drain pump removal 41
Figure 5-8: Removing Control Electronic 43
Figure 5-9: Removing the Power electronic 44
Figure 5-10: Ribbon Cable with pin 1 position noted. 45
Figure 5-11: Water level switch 47
Figure 5-12: Heater relays with bracket 48

W1900 Series Clothes Washers – List of Tables

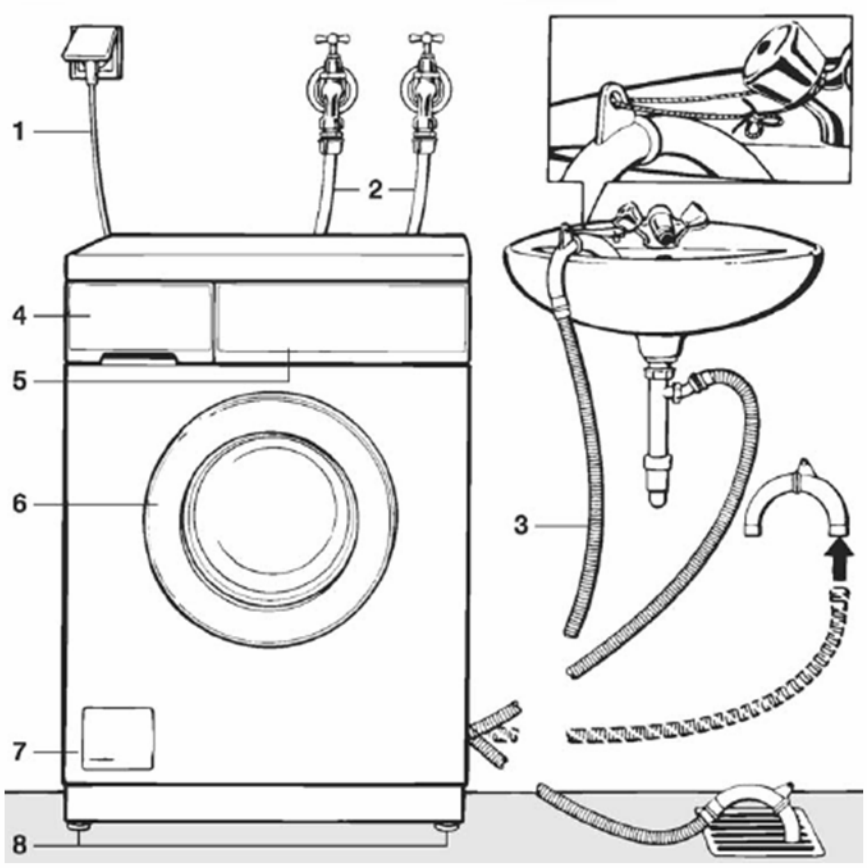
Table 1-1: Technical Data (Continued on Table 1-2)..... 11
Table 1-2: Technical Data (Continued from Table 1-1) 12

Table 4-1: NTC Temperature Sensor - Resistance 28
Table 4-2: Imbalance Monitoring 33

Table 6-1: Service Mode Functions (W1903, W1918, W1926 & W1930)..... 49
Table 6-2: Service Mode Functions (W1966 & W1986) 50
Table 6-3: Fault Codes (W1966 & W1986)..... 51
Table 6-4: Programming Mode Functions for W1966 & W1986 (Continued on Table 6-5) 55
Table 6-5: Programming Mode Functions for W1966 & W1986 (Cont. from Table 6-5, Cont. on Table 6-6)..... 56
Table 6-6: Programming Mode Functions for W1966 & W1986 (continued from Table 6-5) 57
Table 6-7: Fault Indicators (Continued on Table 6-8)..... 63
Table 6-8: Fault Indicators (Continued from Table 6-7) (Continued on Table 6-8)..... 64
Table 6-9: Fault Indicators (Continued from Table 6-8) (Continued on Table 6-10).... 65
Table 6-10: Fault Indicators (Continued from Table 6-9)..... 66

1.0 Construction and Design

1.1 Appliance Overview

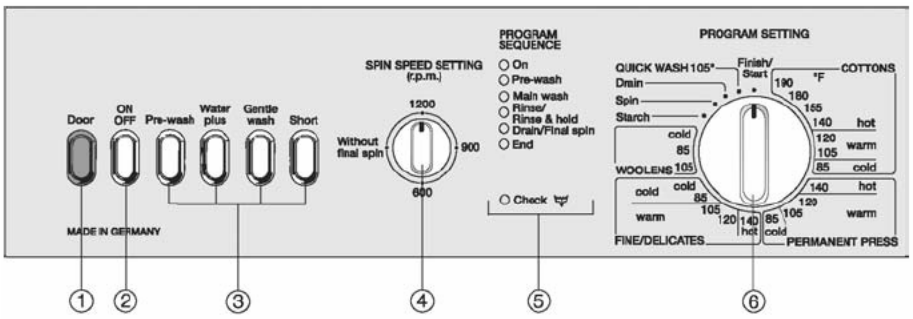


1	Supply Cable	5	Control Panel
2	High Pressure Intake Hoses	6	Drum Door
3	Flexible Drain Hose, With Detachable Swivel Elbow	7	Access Panel for Lint Filter and Drain Pump
4	Detergent Dispenser Drawer	8	Four Height Adjustable Legs

Figure 1-1: Appliance Overview (Typical W1900 Series Washer)

1.2 Overview of Controls

W1903



① "Door" button;
opens the drum door.

② "ON/OFF" button;
Turns the machine on and off or interrupts a program.
The "On" lamp illuminates.

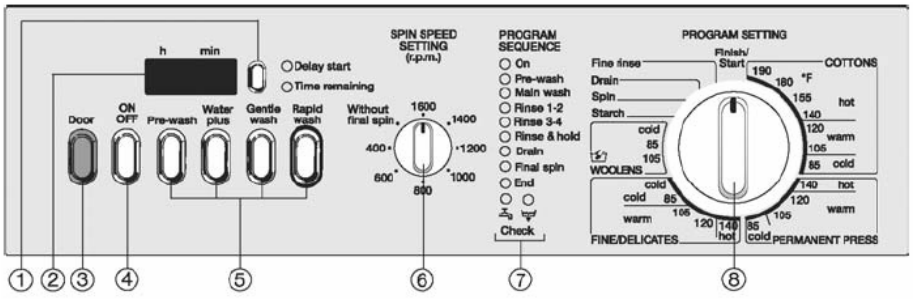
③ Pushbuttons for additional functions.

④ SPIN SPEED SELECTOR switch.

⑤ PROGRAM SEQUENCE indicators (LED indicator lamps).

⑥ PROGRAM SELECTOR

W1918



① "Delay start" button.

② Time display "hours, mins".

③ "Door" button;
opens the drum door.

④ "ON/OFF" button;
Turns the machine on and off or interrupts a program.
The "On" lamp illuminates.

⑤ Pushbuttons for additional functions.

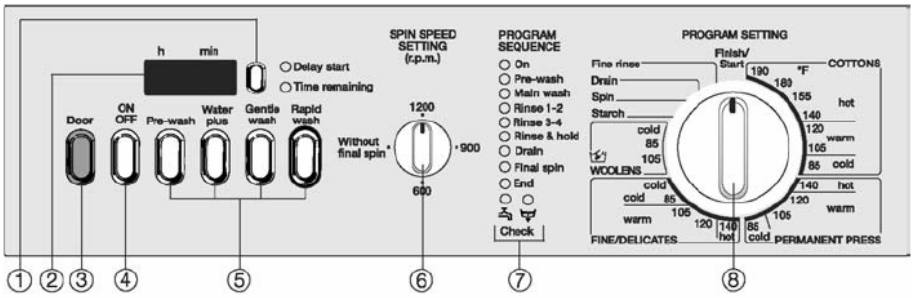
⑥ SPIN SPEED SELECTOR switch.

⑦ PROGRAM SEQUENCE indicators (LED indicator lamps).

⑧ PROGRAM SELECTOR switch.

Figure 1-2: Overview of Controls (W1903 & W1918)

W1926



① "Delay start" button.

② Time display "hours, mins".

③ "Door" button;
opens the drum door.

④ "ON/OFF" button;
Turns the machine on and off or interrupts a program.
The "On" lamp illuminates.

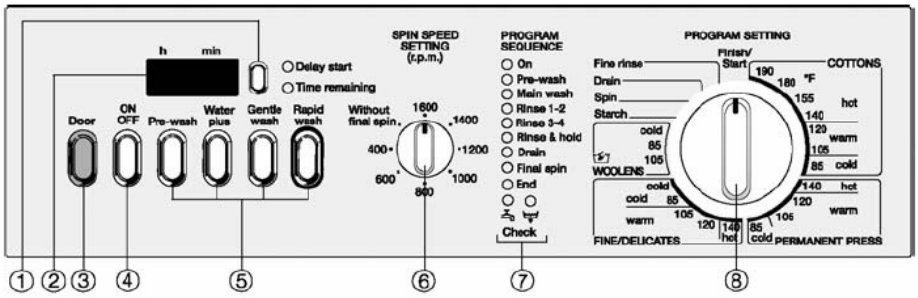
⑤ Pushbuttons for additional functions.

⑥ SPIN SPEED SELECTOR switch.

⑦ PROGRAM SEQUENCE indicators (LED indicator lamps).

⑧ PROGRAM SELECTOR switch.

W1930



① "Delay start" button.

② Time display "hours, mins".

③ "Door" button;
opens the drum door.

④ "ON/OFF" button;
Turns the machine on and off or interrupts a program.
The "On" lamp illuminates.

⑤ Pushbuttons for additional functions.

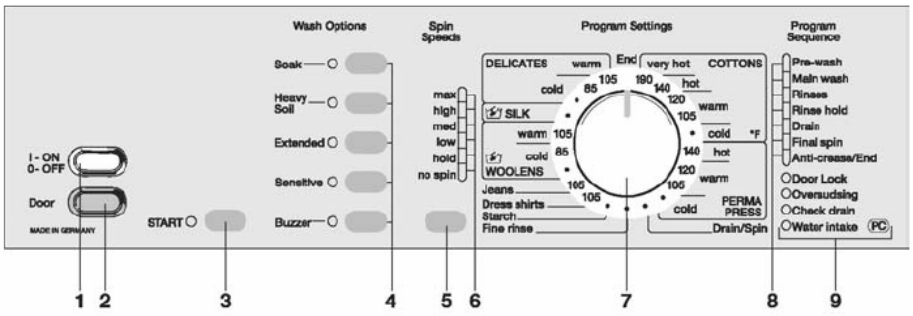
⑥ SPIN SPEED SELECTOR switch.

⑦ PROGRAM SEQUENCE indicators (LED indicator lamps).

⑧ PROGRAM SELECTOR switch.

Figure 1-3: Overview of Controls (W1926 & W1930)

W1966



1 "On/Off" button
turns the machine on and off or interrupts a program.

2 "Door" button
opens the drum door.

3 "START" button
begins the wash program.

4 Wash options
are special wash features available to enhance a wash program.

5 Spin speed selector button
allows you to select the final spin speed of a program.

6 Spin speed indicator light

7 Program selector
for selecting a program and wash temperature.

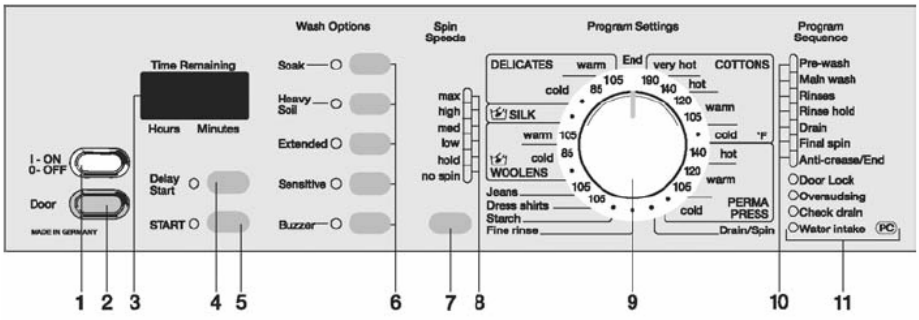
The light ring will go out a few minutes after the end of the program to save energy.

8 Program sequence display
shows the currect cycle of the wash program.

9 Fault indicators

Figure 1-4: Overview of Controls (W1966)

W1986



1 "On/Off" button
turns the machine on and off or interrupts a program.

2 "Door" button
opens the drum door.

3 "Time Remaining" display
shows the countdown to the end of the program.

4 "Delay Start" button
allows you to delay the start of a program from 30 mins to 24 hours. This time will appear in the "Time Remaining" display.

5 "START" button
begins the wash program.

6 Wash options
are special wash features available to enhance a wash program.

7 Spin speed selector button
allows you to select the final spin speed of a program.

8 Spin speed indicator light

9 Program selector
for selecting a program and wash temperature.

The light ring will go out a few minutes after the end of the program to save energy.

10 Program sequence display
shows the current cycle of the wash program.

11 Fault indicators

Figure 1-5: Overview of Controls (W1986)

1.3 Technical Data

	W1903	W1918	W1926	W1930	W1966 W1986
Height	331/4" – 337/8"	331/4 – 337/8"	331/2" + 1/2"/-1/4" (850mm + 10/-0,5 mm)	331/4 – 337/8" (845mm + 860mm)	331/2" + 1/2"/-1/4" (850mm +10/-0,5 mm)
Width	23 5/8" (600 mm)	23 5/8" (600 mm)	23 5/8" (600 mm)	23 5/8" (600 mm)	23 5/8" (600 mm)
Depth (inc. distance from wall)	24" (610 mm)	24" (610 mm)	28 1/4" (715 mm)	24" (610 mm)	28 1/4" (715 mm)
Weight	220 lbs. (100 kg)	220 lbs. (100 kg)	252 lbs. (114 kg)	220 lbs. (100 kg)	252 lbs. (114 kg)
Capacity	11 lbs. (5 kgs.) dry laundry	11 lbs. (5 kgs.) dry laundry	13 lbs. (6 kgs.) dry laundry	11 lbs. (5 kgs.) dry laundry	13 lbs. (6 kgs.) dry laundry
Rated Load	2.8 kW	2.8 kW	2.8 kW	2.8 kW	2.8 kW
Circuit Breaker	15 amp	15 amp	15 amp	15 amp	15 amp
Water Pressure	15-145 psi (1–10 bar)	15-145 psi (1–10 bar)	15-145 psi (1–10 bar)	15-145 psi (1–10 bar)	15-145 psi (1–10 bar)
Water Connection	¾" in. hose thread Cold Only	¾" in. hose thread Hot & Cold	¾" in. hose thread Hot & Cold	¾" in. hose thread Hot & Cold	¾" in. hose thread Hot & Cold

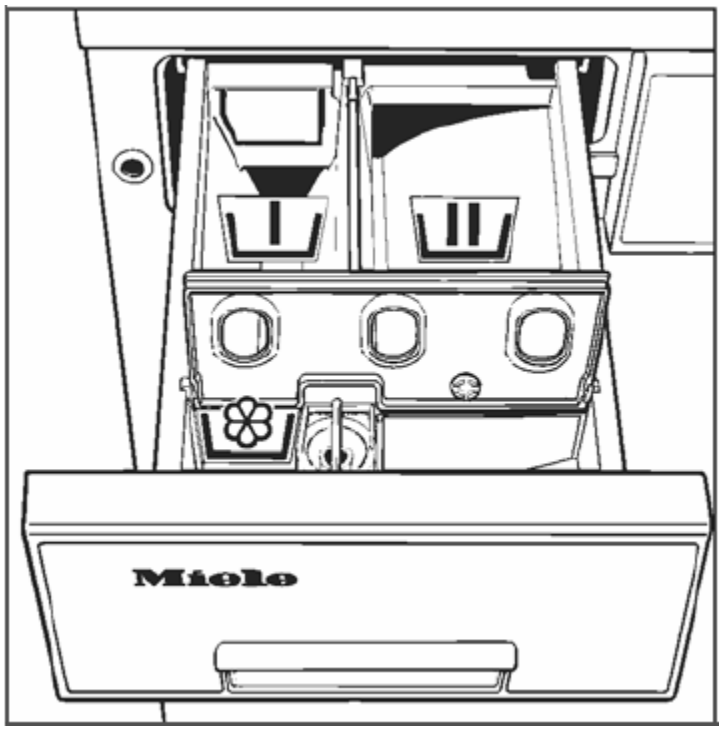
Table 1-1: Technical Data (Continued on Table 1-2)

	W1903	W1918	W1926	W1930	W1966 W1986
Drain Connection	5’ hose 1 ¼” OD 1” ID	5’ hose 1 ¼” OD 1” ID	5’ hose 1 ¼” OD 1” ID	5’ hose 1 ¼” OD 1” ID	5’ hose 1 ¼” OD 1” ID
Maximum Drain Height	4’	4’	4’	4’	4’
Power Requirements	120 V/240 (208) V single phase 60 Hz	120 V/240 (208) V single phase 60 Hz	120 V/240 (208) V single phase 60 Hz	120 V/240 (208) V single phase 60 Hz	120 V/240 (208) V single phase 60 Hz
Power Cord / Plug	5’ cable NEMA 15-30 plug	5’ cable NEMA 15-30 plug	5’ cable NEMA 15-30 plug	5’ cable NEMA 15-30 plug	5’ cable NEMA 15-30 plug
Spin Speed	600-1200 rpm	400-1600 rpm	600-1200 rpm	400-1600 rpm	400-1200 rpm
Temperature Control	Cold to 190º	Cold to 190º	Cold to 190º	Cold to 170º	Cold to 190º
Floor Load	360 lbs	360 lbs	682 lbs	360 lbs	682 lbs

Table 1-2: Technical Data (continued from Table 1-1)

1.4 Dispenser Assembly

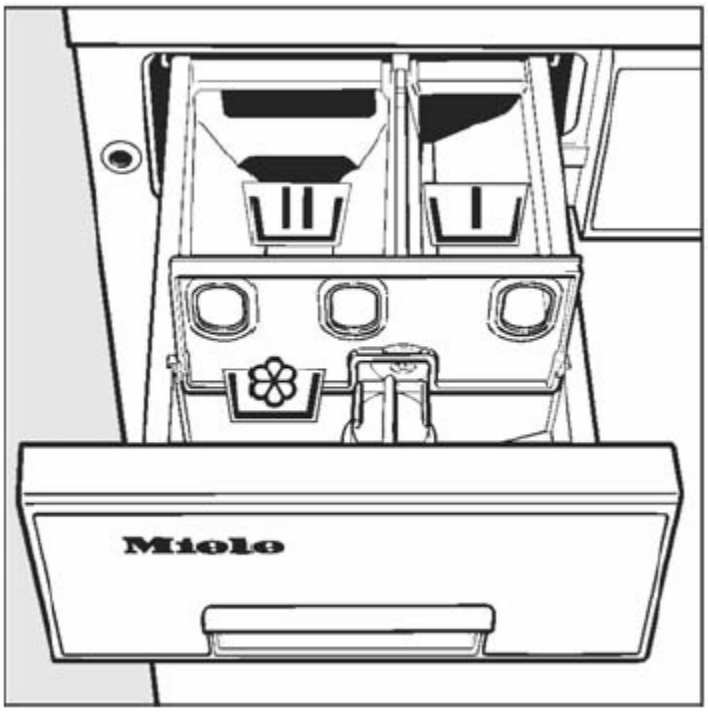
5 Kilogram Models (W1903, W1918, W1930 & W1930i)



Detergent dispenser drawer
Compartment I - for the pre-wash
Compartment II - for the main wash.
Compartment ❀ - (with lid) for fabric softener or starch.

Figure 1-6: 5 Kilogram Dispenser (W1903, W1918, W1930 & W1930i)

6 Kilogram Models (W1926, 1966, & 1986)

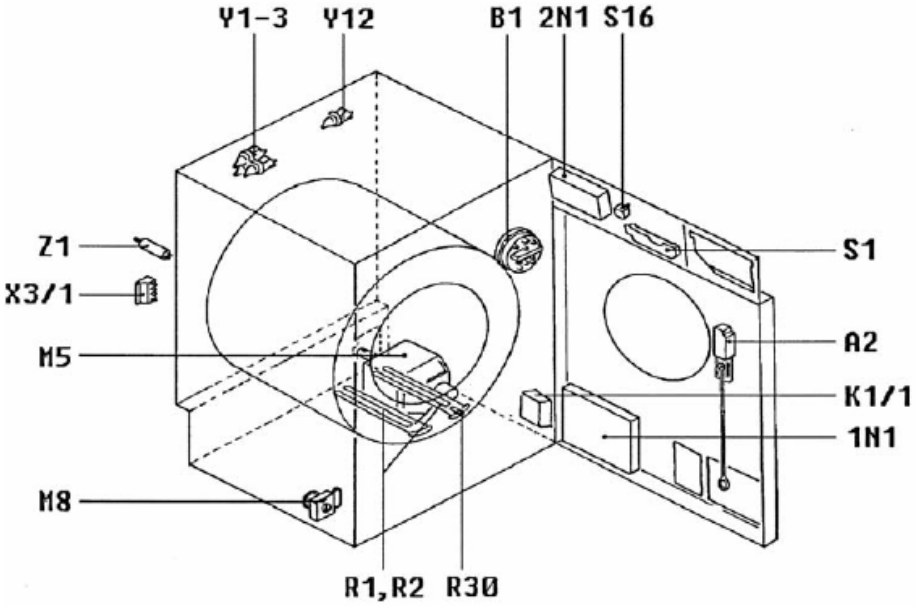


Detergent dispenser drawer
Compartment I - for the pre-wash
Compartment II - for the main wash.
Compartment ❀ - (with lid) for fabric softener or starch.

Figure 1-7: 6 Kilogram Dispenser (W1966 & 1986)

Note:
The largest compartment is always the Main Wash.

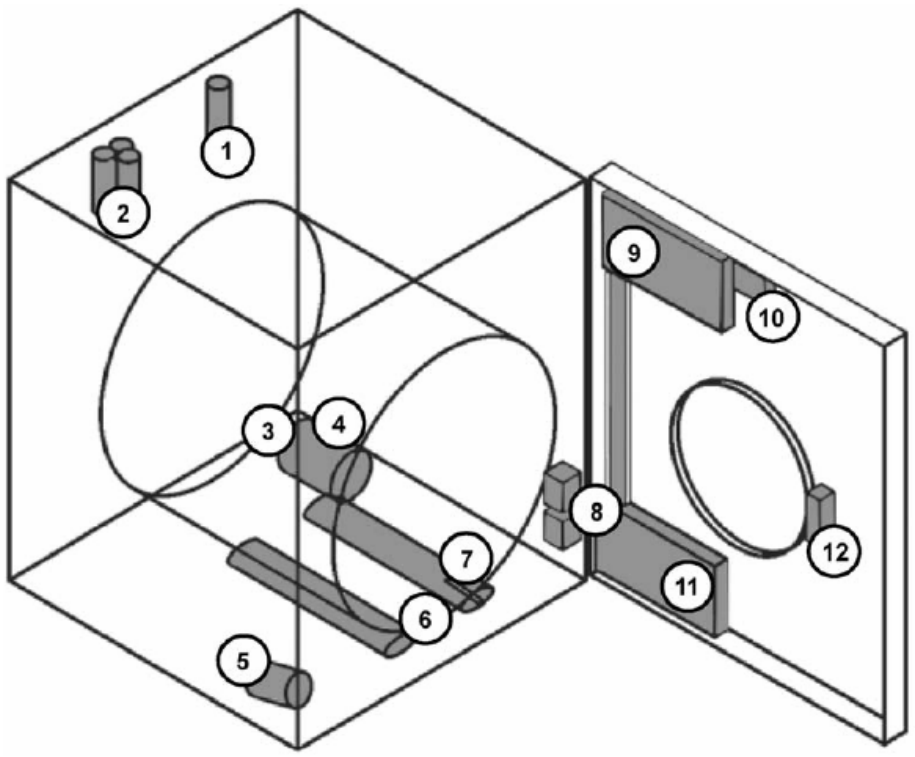
1.5 Layout of Electrical Components W1903, W1918, W1926 & W1930



A2	Door Lock	R30	Temperature sensor
B1	Level switch	S1	Selector switches – Additional functions
K1/1	Relay – Heating	S16	Selector switch – Spin Speed
M5	Motor – Drum drive	X3/1	Mains terminal strip
M8	Motor – Drain pump	Y1-Y3	Inlet valves
1N1	Power module	Y12	Hot water valve
2N1	Control module	Z1-Z3	Interference suppressor
R1, R2	Heating		

Figure 1-8: Overview of Components (W1903, W1918, W1930 & W1926)

1.6 Layout of Electrical Components W1966 & W1986



1 Hot Water Valve
2 Cold Water (Triple) Valve
3 Main Motor & Interference Capacitor
4 Main Motor
5 Drain Pump
6 Heating Element (2)
7 Heater NTC
8 Heater Relays
9 Control Electronic
10 Input Board
11 Power Electronic
12 Door Lock

Figure 1-9: Overview of Components (W1966 & W1986)

2.0 Installation

- The Shipping Struts must be completely removed prior to any operation and / or testing.
- Ensure the appliance is being installed on a suitable surface.
- Chlorine Bleach is not recommended.
- Only detergent carrying an “H.E.” (High Efficiency) designation should be used.
- The appliance comes equipped to operate using only powder detergent; to use liquid detergents an optional detergent drawer insert is required - call Miele Technical Support to order.
- The machine must be perfectly level to ensure safe and proper operation.
- To perform a stacked installation an approved Miele Stacking Kit that matches the exact model numbers must be used. The washer must be the lower appliance and installed first.

Note:
A Laundry Stand and a Stacking Kit cannot be used together.

2.1 Electrical Requirements

- 120/240 (208) Volt, 60Hz., 15 Amp breaker
  Washers are equipped with a 4 wire power cord consisting of L1, L2, N and Ground; equipped with a NEMA 14-30 plug, for connection to a NEMA 14-30 receptacle.

Note:
For proper appliance operation a Neutral is required.

Note:
If you do not have a dedicated 15 Amp circuit for this appliance, but have a NEMA 14-20 or NEMA 14-30, 240V, 30 Amp outlet, you may be able to use a Miele “Easy Installation Kit” to simplify the electrical connection. For further information refer to Electrical Information pages in the Installation Manual.

- Do not cutoff / remove the plug from the power cord.

2.2 Plumbing Requirements

Water Inlet

- All W1900 series washer (except the W1903) are equipped with two Water Inlet Hoses. Connect the Cold Water Intake Hose (blue mark) to the Cold Water Valve and the Hot Water Intake Hose (red mark) to the Hot Water Valve.

- The W1903 is equipped with a single Inlet Hose; that must be connected to a cold water supply.

- The water pressure must be within 15-145 psi (1-10 bar). If the water pressure is greater than 145 psi (10 bar), a Pressure Reducer must be installed. If the water pressure is below 15 psi (1 bar), insufficient water may be available for a complete fill. The Water Intake Hoses are equipped with Screen Filters - do not remove these filters.

Note:
For customers requesting a “cold water only connection” on washers equipped with Dual Inlet Hoses a “Y” adapter (available at most hardware stores) can be utilized. Both Inlet Hoses (hot and cold) should be connected to the adapter.

Drain Connection
The appliance is equipped with a 5 ft. (1.5 m) drain hose with a maximum delivery height of 4ft. (1.2 m) which can be connected as follows:

1. Directly into a sink: hook the hose over the edge of the sink and secure it firmly (i.e. by tying the hose to the water faucet etc...).
2. To a stand pipe: place the Drain Hose into a 1 1 /2" (38 mm) stand pipe and secure in place.
3. To a floor drain: The machine is equipped with an Airgap/Anti-Siphoning System so that no minimum drain height is required.

Important!
Ensure all connections are secure & hoses are free from sharp bends and kinks.

2.3 Installation Procedure

1. Lift the machine from the shipping pallet and move it to the installation site. Do not lift the machine by the Drum Door.

Note:
Ensure that the machine feet and the floor are dry to prevent slippage during the spin cycle.

2. **REMOVE THE SHIPPING STRUTS** - by performing the following:

   - Turn the left Shipping Strut 90° counterclockwise

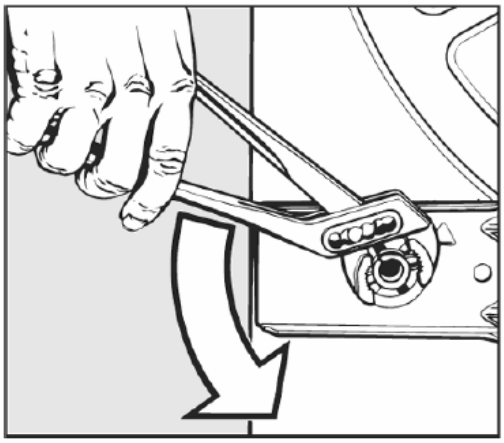


Figure 2-1: Turning the left Shipping Strut Counter Clockwise.

   - Turn the right Shipping Strut 90° clockwise.

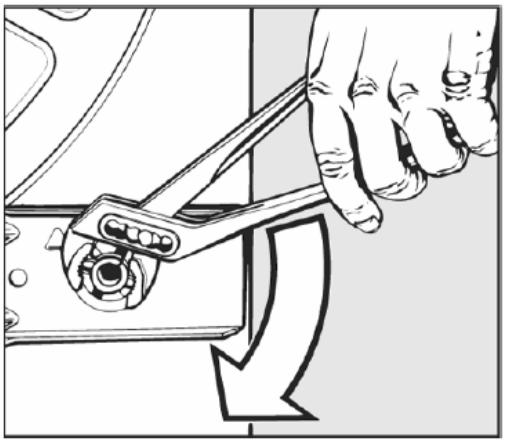


Figure 2-2: Turning the right Shipping Strut Clockwise.

- Remove the two Struts and Support Plate Assembly.

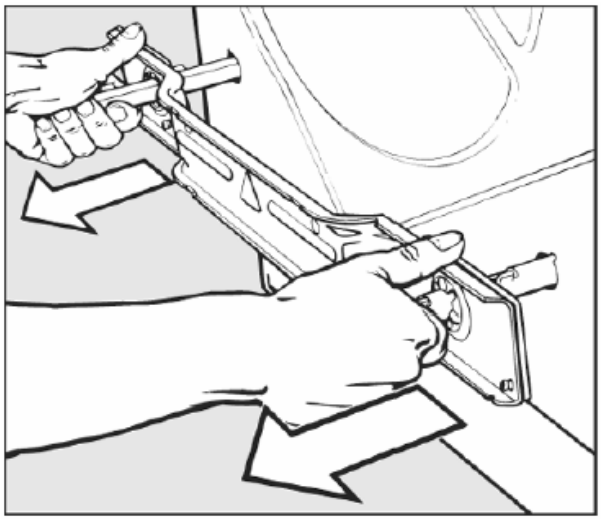


Figure 2-3: Removing the Strut Support Assembly

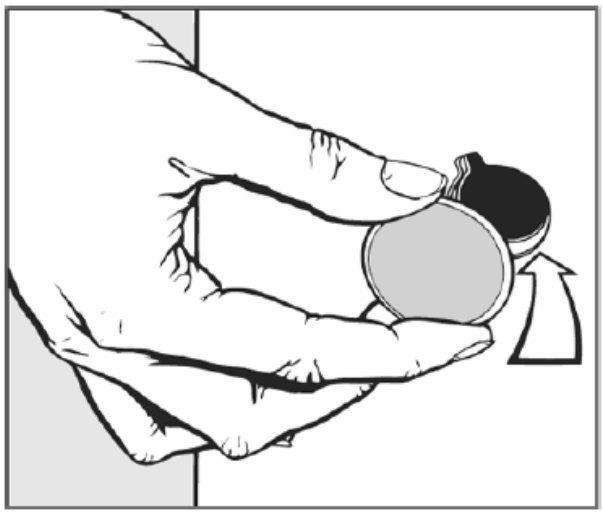


Figure 2-4: Plugging the Shipping Strut Holes

Note:
Movement of the machine without the Shipping Struts in place should be kept to a minimum.

NEVER operate the appliance with the Shipping Struts installed.

The Shipping Struts should be stored in a safe place and must be reinstalled if the machine is going to be moved.

Reinstallation can be performed by reversing the above procedure.

3. Refer to Figure 2-5. To level the appliance, perform the following:

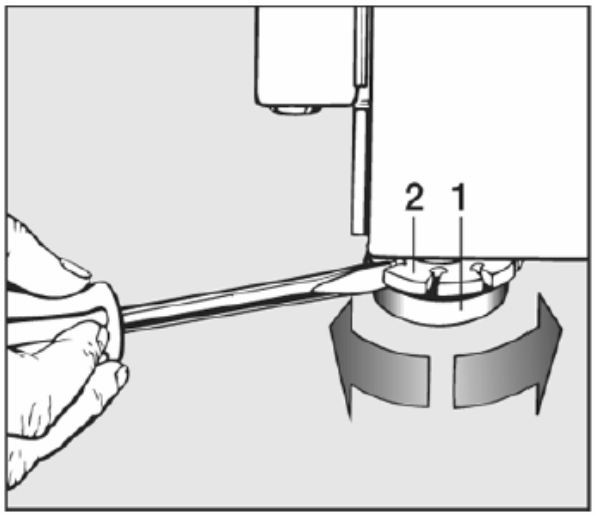


Figure 2-5: Adjusting the Legs to Level the Appliance.

a. Tip the machine slightly and place a support, such as a block of wood, underneath it.
b. Unscrew each of the four feet as much as necessary by turning both the foot 1 as well as the locking ring 2 counterclockwise using a screwdriver - as shown.
c. Remove the support, stand the machine on its feet and check to see if it is level.
d. Repeat this procedure as often as necessary until the machine stands level.
e. Turn each locking ring until it is tight against the bottom of the machine frame.

Caution!
All four locking rings must be tight against the bottom of the machine. Operating an unleveled appliance can cause damage to both the appliance and its surroundings.

After the Clothes Washer has been leveled, install the Stacking Kit (if being used) - refer to the Installation Manual for further information.

4. Perform the Plumbing Connections.
5. Ensure the electrical supply matches the specifications on the Data Tag. Perform the Electrical Connection.
6. Perform an operation check of the appliance.

3.0 Commission and Operation

3.1 General Operation

1. Prepare the wash load
2. Press the “Door” Button to open the door
3. Load the machine
4. Close the Machine Door
5. Add detergent
6. Turn the Program Selector to Finish / Start
7. Press the “ON/OFF” Button
8. Press any desired “Additional Function” Pushbuttons
9. Select the final spin speed
10. Turn the Program Selector to the desired program

3.2 Additional Function Pushbuttons

Pre-Wash
- Use for heavily soiled or stained laundry items.
- Requires additional detergent be added to Pre Wash Compartment of the Dispenser Drawer.

Water Plus
Slightly increases the water level. Usually used for:
- Particularly delicate fabrics (in addition to the “Gentle Wash” Option)
- Areas with hard water (were additional detergent is required)
- Areas with soft water (to enhance washing and rinsing results)
- People who are allergic or sensitive to detergent.

Rapid Wash
- Offers a quick wash cycle (approx. 38 minutes)
- Can be used with or without a Pre-Wash. (is available in all programs)

Delay Start
Upon turning on the machine, the “Delay Start” Lamp will be blinking. The start of the program can be delayed up to 9 hours and 30 minutes. Each press of the button adds 30 minutes.

Gentle Wash
Drum movement is reduced by half for gentle washing of slightly soiled laundry items, or delicate fabrics which otherwise tend to pill.

Soak
For heavy soiling and stubborn stains (e.g. blood, grease, cocoa), that require soaking before the main wash.

W1966
Use the Soak button to toggle between the two settings:
Soak LED on = add a 120 minute soak to the program
Soak LED off = no soak (default)

W1986
Each Press of the Soak Button adds 30 minutes (up to 6 hours max) of soak time to the wash program.

Extended
For laundry with stubborn or old stains. The longer wash time works to relax fabrics and release stains. The total time for the wash program will be extended.

Sensitive
Adds an additional final.

Buzzer
A buzzer can be selected to signal the end of the wash program.

4.0 Description of Function

4.1 Casing Assembly

The clothes washer casing consist of a one piece assembly comprised of the rear wall, side walls and base of the appliance. The front of the appliance is fitted with a removable Stabilizer Brace and a Service Access Panel.

4.2 Electro-Mechanical Door Lock

The Door Lock Assembly is an electro-mechanical device, that is energized (to unlock the door) when the user presses the Door Button.

The circuit voltage, appearance and part numbers vary by model number. Refer to the model specific parts list for further information.

The Door Lock System incorporates a safety system to prevent the door from opening if:

- There is water in the machine
  (as determined by the Level Switch)
- The drum is moving
  (as determined by the Tacho-Generator and / or Electronic).

4.3 Miele Eco Wash System

All Miele Electronic Clothes Washers use the Miele Eco Wash System to avoid wasting detergent by sealing the Drain Outlet with a Ball Valve (Refer to Figure 4-1 – Item 1). This ensures that all the detergent is retained in the suds container where it can be quickly dissolved. Water is taken into the suds container via the detergent dispenser, concertina hose and siphon odor trap.

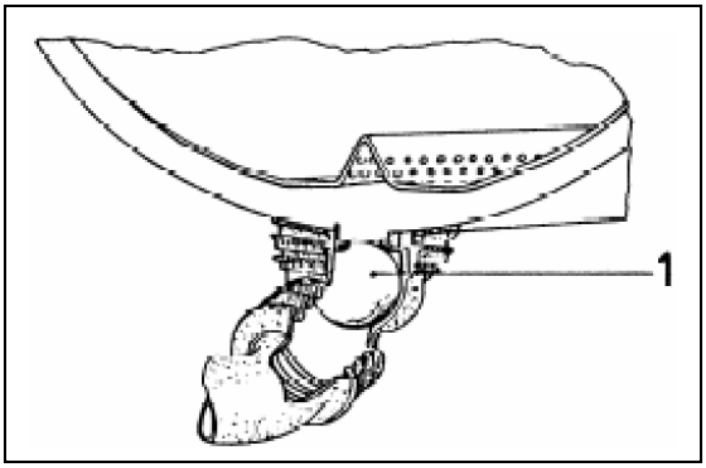


Figure 4-1: Eco Wash System

4.4 Drum Suspension

A characteristic feature of Miele Washers is the Suds Container Suspension Assembly; as illustrated in Figure 4-2. The mechanical forces that develop during appliance operation is transferred (via the bearing and the bearing cross) to the shocks and springs for dampening.

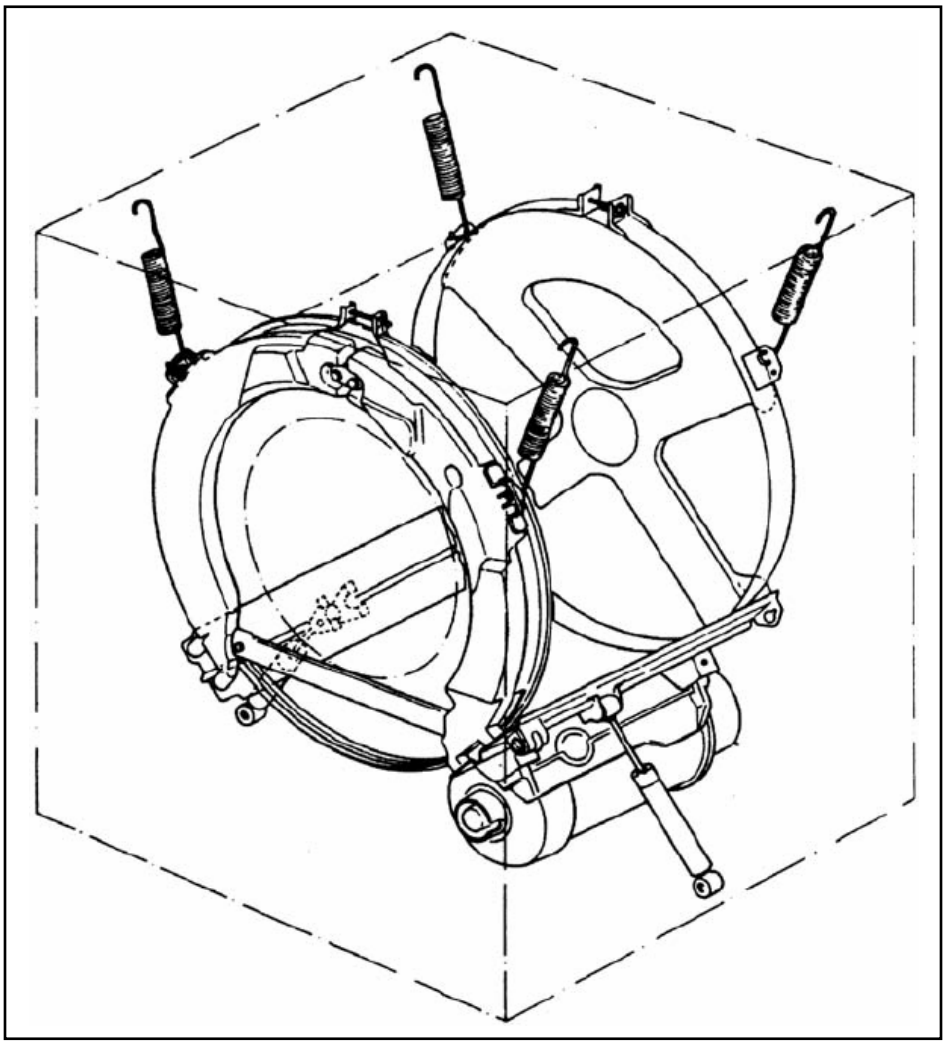


Figure 4-2: Drum Suspension Components

4.5 Heating Circuit Information

There are two Heating Elements mounted between the drum and the suds container. The Heating Elements are responsible for heating water to the selected temperature. The Heater Elements are controlled via two (2) Relays, energized by the Electronic.

The temperature of the water is monitored by the NTC (Negative Thermal Coefficient) Sensor. As the temperature increases, the resistance decreases. The resistance value is monitored by the Electronic and is used to calculate the temperature of the water. Refer to the NTC Temperature Sensor Operation Table (Table 4-1) below for specific values.

NTC Temperature Sensor - Operation

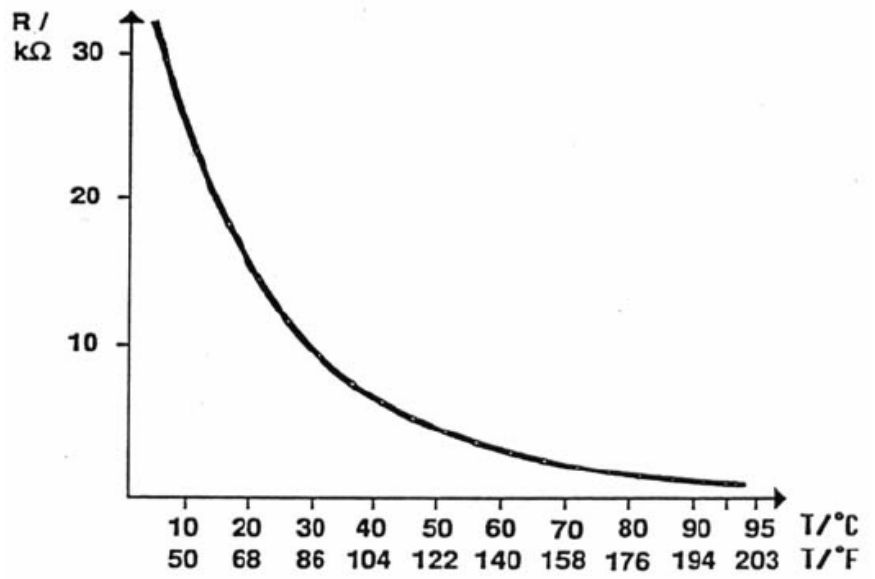


Table 4-1: NTC Temperature Sensor - Resistance

4.6 Water Level Switch

The Water Level Switch monitors the water level inside the drum.

The switch operates by closing specific electrical contacts depending on the amount of pressure against its internal diaphragm. As the water level inside the drum increases, the pressure against the switch also increases. The changes in the switching are monitored by the Electronic and are used to calculate the exact water level inside the appliance. This design offers the benefit of keeping the water level consistent, regardless of the absorption rate of the laundry.

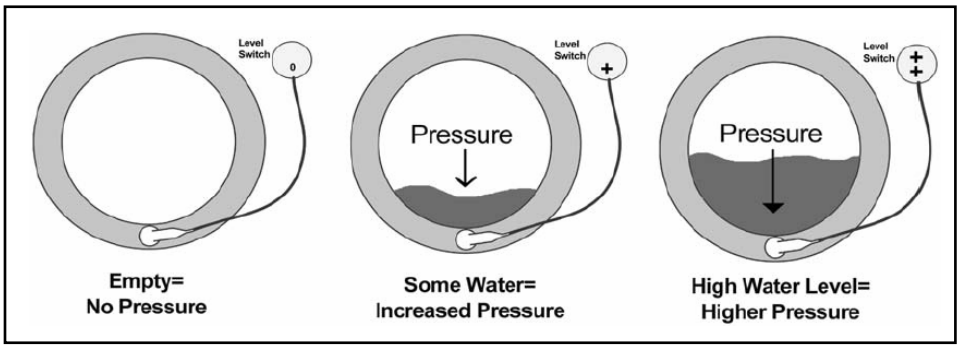


Figure 4-3: Increased in water volume = increased pressure against the Level Switch.

Note:
On the W1966 and W1986 model clothes washers, the Water Level Switch is incorporated into the Control Electronic.

During the heating stage of the wash program the Water Level Switch is used by the Electronic System to ensure water is present before the heating circuit is activated. In addition the circuit is monitored for any changes in pressure. Sudden changes in pressure usually indicate an oversudsing condition. The Electronic System then automatically performs the necessary adjustments to rectify the condition.

4.7 Water Control System – Intake

During the initial water intake, the Electronic monitors the duration of time until the Water Level Switch is actuated. This value is used so that certain wash variables (i.e. wash time, number of rinses) can be controlled during the program.

If water level 1 is not reached within the programmed “water intake time” (2 or 4 minutes), the Inlet Valves are closed; the program is cancelled and the Drain Pump is operated for 90 seconds.

4.8 Water Control System – Rinses

During the rinse segment of the program if Level 1 is not reached within 90 seconds of water intake; the rinse duration is extended from 4.5 to 6.5 minutes by the Electronic.

4.9 Inlet Hose(s) Filters

The Water Inlet Hoses are equipped with two filters to protect the Water Valves. One filter is fitted at the end of the hose (directly at the water connection). The second filter is fitted within the threaded connections (on the rear of the washer).

4.10 Inlet Valves

All washers (except the W1903) are equipped with a single Electro-Mechanical Water Valve; to control hot water entering the appliance.

The cold water supply to the washer is controlled via a Triple Valve Assembly. Although the component is physically one item; each valve is plumbed (and electrically energized) separate to provide water control for the:

- Pre-Wash
- Main-Wash
- Rinse

4.11 Dispenser Assembly

The Dispenser Assembly distributes the incoming water to separate compartments within the Dispenser Drawer.

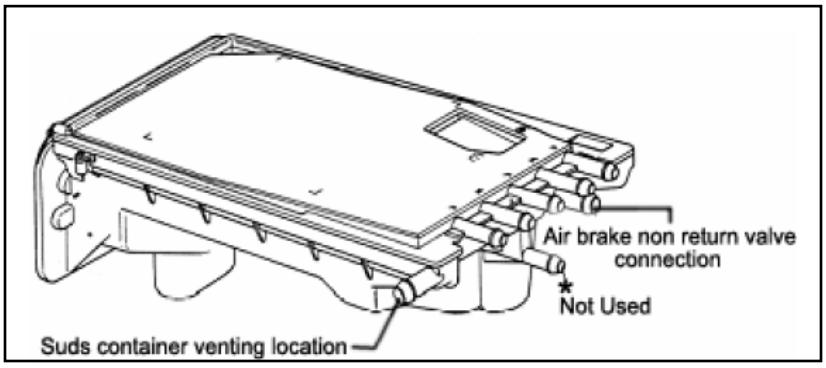


Figure 4-4: Dispenser Assembly

4.12 Non-Return Valve & Drain Venting

Refer to Figure 4-5 – Non-Return Valve.

During the drain segment of a program the Ball-Seat Valve, (item 1) closes preventing dirty water from re-entering the Suds Container. Should the drain connection on site be lower than the water level (within the appliance) the valve opens to prevent any siphoning of water from the appliance.

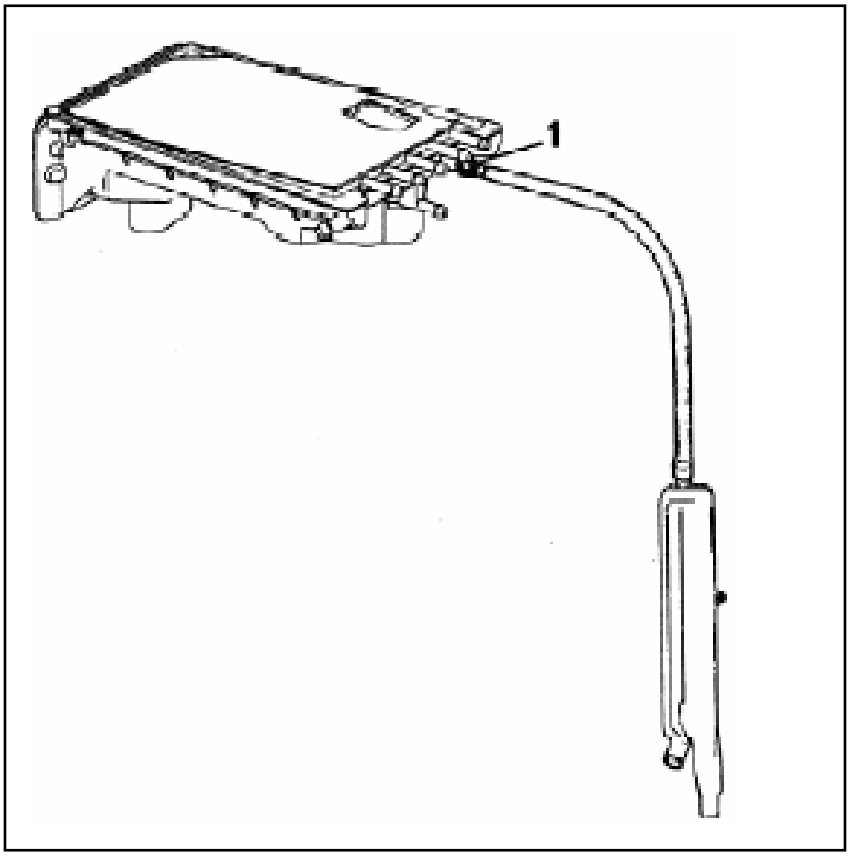


Figure 4-5: Non-Return valve

4.13 Main Motor

The Main Motor operates on DC (Direct Current) and operates at various speeds. The front section of the motor is removable for access to the Tachogenerator and Motor Brushes. The front section is removable with the motor installed, allowing it to remaining connected to the drives.

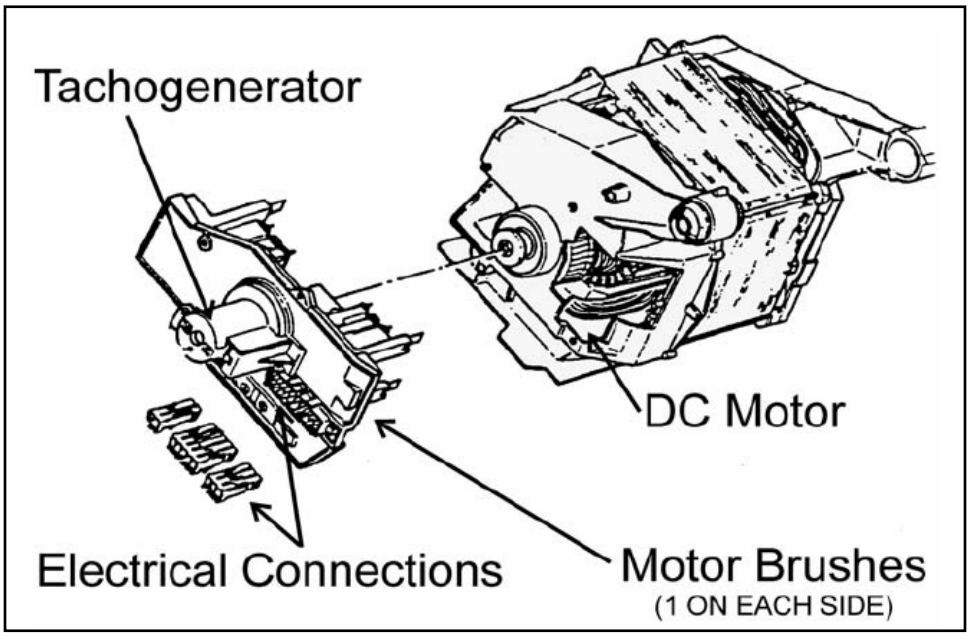


Figure 4-6: Main Motor Assembly

4.14 Motor Speed Control

Motor speed is controlled via the Electronic. The Electronic controls the switching for the voltage applied to the motor and the field windings.

4.15 Tachogenerator

The Tachogenerator monitors the status of the Main Motor. As the motor turns, the Tachogenerator creates pulses. These pulses are monitored by the Electronic for:

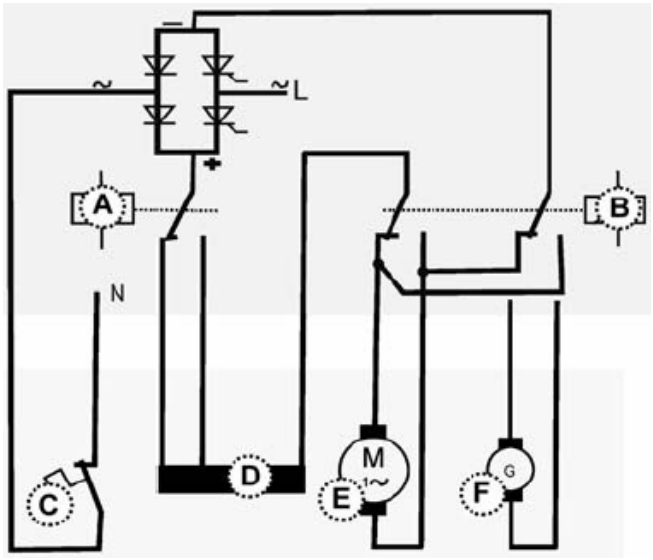
- Determining if the motor is turning. (The Door Button is disabled by the Electronic if drum is > 7rpm)
- For imbalance monitoring (via erratic pulses)
- To monitor motor speed (used to regulate the motor speed)

4.16 Imbalance Monitoring

Range 1	0-0.7 kg	No reduction in spin speed.
Range 2	0.7-1.1 kg	If imbalance exists after 3 attempts to redistribute the load then the spin speed is limited to 2nd highest value (exact rpm varies by model number)
Range 3	1.1-2.0 kg	If imbalance exists after 3 attempts to redistribute the load then the spin speed is limited to 3rd highest value (exact rpm varies by model number)
Range 4	> 2 kg	Load distribution attempts continually made until imbalance is reduced or the program time has completed.

Table 4-2: Imbalance Monitoring

4.17 Motor Circuit



A Change Field Relay (spin/ wash actuation)
B Motor Direction Relay
C Temperature Limiter
D Field Windings
E Rotor Windings
F Tachogenerator

Figure 4-7: Motor Circuit

4.18 Program Control

The Program Control consist of the Electronic Control Unit (Upper Electronic) and the Power Supply Electronic Unit (Lower Electronic).s

Functions of the Electronic Control Unit include:
- Precise program and component control
- Monitoring circuits (i.e. motor speed, temperature etc…)
- A Fault Finding and Service Mode
- Program Mode (W1966 & W1986)

Functions of the Power Supply Electronic include:
- Providing the Electronic Control Unit with the “zero crossover point signal” (used for timing)
- Component switching (via relays and thyristors)

On models equipped with the Delayed Start feature, a third electronic is installed. This Electronic provides the delay control and also contains the numeric LEDs, for displaying the remaining wash time to the user.

Important!
If an Electronic is suspected to be faulty; the "Electronic Test" procedure must be performed. Refer to Section 5.13 – Determining Which Electronic Requires Replacement.

4.19 Heater Relays

Switching of the two Heater Elements is performed via two relays. Both relays are controlled by the Electronic, and are energized when:

1. The program calls for heating AND
2. The water level is at an acceptable level (as determined by the Level Switch).

Service Tip:
Even in the Service Mode the Water Level Switch must be satisfied before the Heating Relays & Elements can be powered on.

5.0 Service and Maintenance

Warning!
Prior to performing Service and/or Maintenance procedures...

- The appliance must be disconnected from the main power; by unplugging the appliance and/or shutting off the circuit breaker.

5.1 Dispenser Drawer – Removal

1. Slide the Drawer out from the Control Panel.
2. Press down on the Release Tab (Refer to Figure 5-1, Item 1).
3. Pull the Drawer out, releasing it from the appliance.

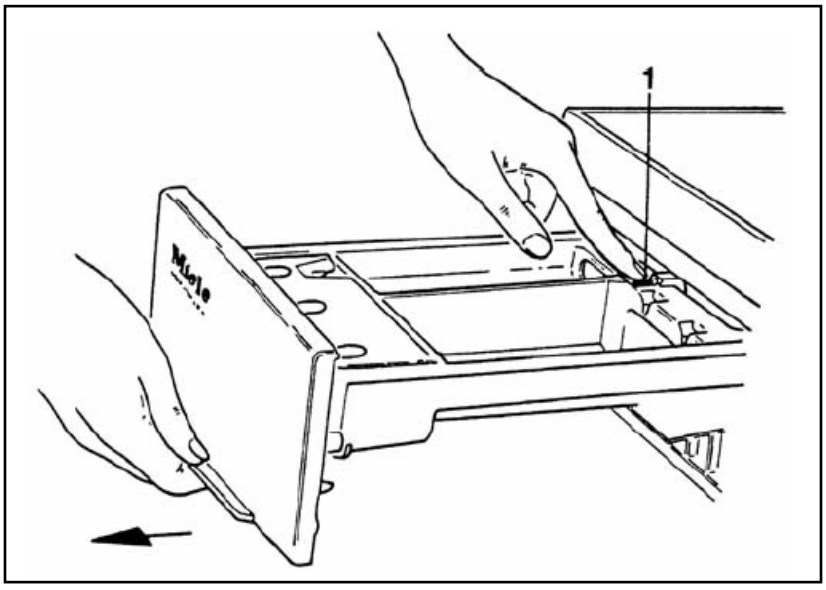


Figure 5-1: Removing the Dispenser Drawer

5.2 Appliance Lid – Removal

1. Refer to Figure 5-2 – Service Access.
2. Remove screws “A” from the edge of the lid.
3. Pull the Lid forward. Lift up the front of the Lid and slide it to the rear of the appliance.
4. Lift the Lid from the appliance.

5.3 Front Service Panel – Access

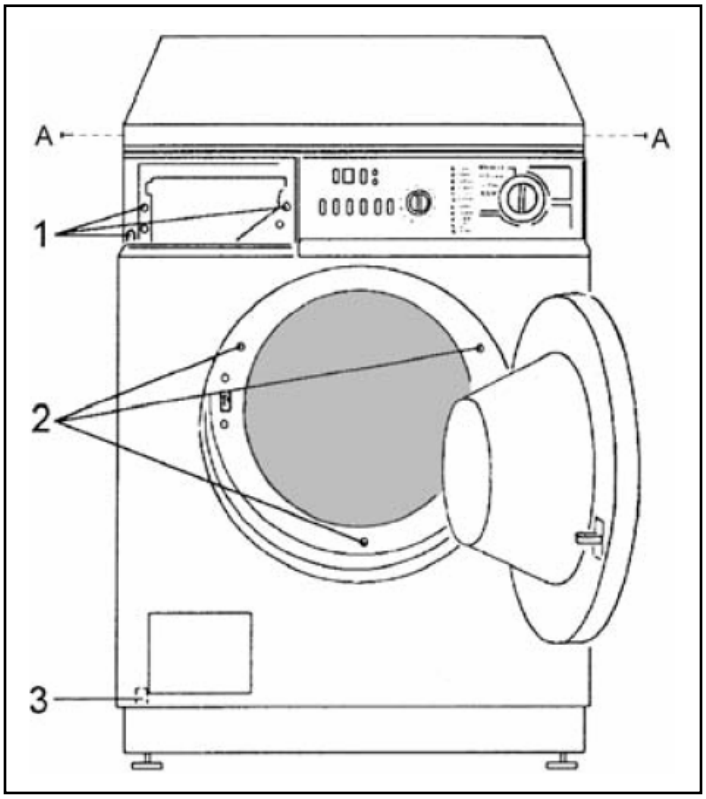


Figure 5-2: Service Access

1. Remove the Dispenser Drawer – Refer to Section 5.1.
2. Refer to the figure 5-2. Remove the two screws (Item 1).
3. Open the Washer Door and remove the three 10 mm hex bolts (Item 2).
4. Open the Front Panel from the left (hinged on the right).

Service Tip:
Before closing the Front Panel, ensure the manual door release is routed through the slot in the Filter Housing Assembly. Refer to Figure 5-2, Item 3.

5.4 Door Seal – Replacement

Refer to Figure 5-3 – Replacing the Door Seal.

1. Open the Front Service Panel – Refer to Section 5.3.
2. Unclip the front edge of the Door Seal from the Font Plate (Item 1) and fold back.
3. Loosen the clamping ring and remove the seal and ring (Item 2).

To fit a new seal, replace parts in reverse order.

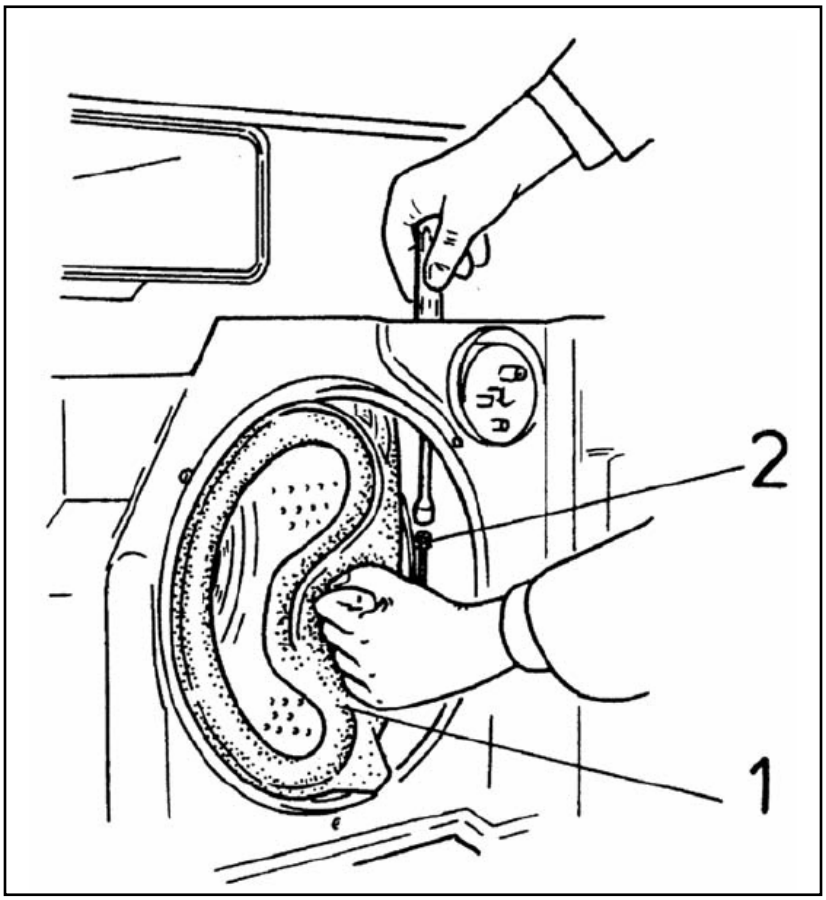


Figure 5-3: Replacing the Door Seal

5.5 Air Trap – Replacement

Refer to Figure 5-4 – Air Trap and Level Switch Components.

1. Open the Front Service Panel – Refer to Section 5.3.
2. Manually drain all remaining water – Refer to Section 5.8.
3. Pull the Air Trap (item 3) outward to remove from the appliance.
4. Remove the Air Hose (item 2).
5. Remove the Seal.

Re-Installation
1. Install the new Seal.
2. Install the new Air Hose.

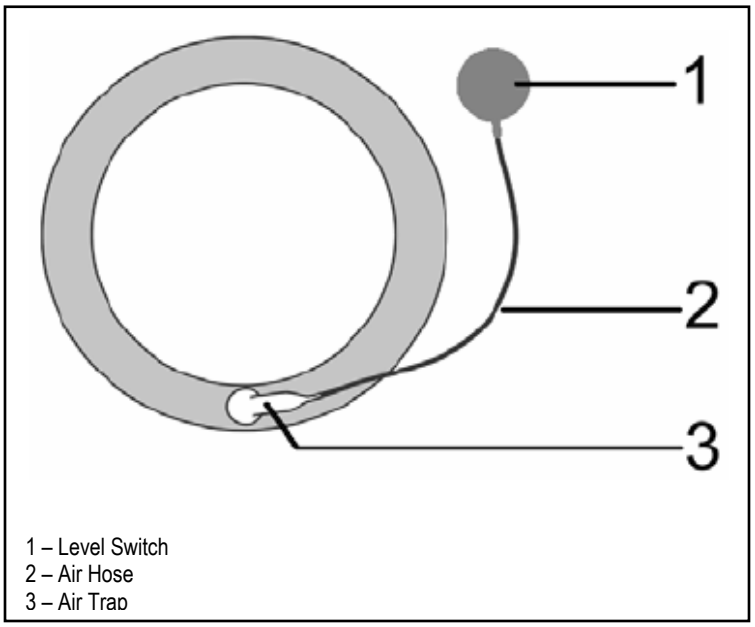


Figure 5-4: Air Trap and Level Switch Components

Important!
Ensure the Air Hose is:
- Routed correctly
- NOT being pinched by any of the retaining clips
- NOT resting against any edge of the appliance frame

Service Tip:
The lug on the Air Trap must engage in the corresponding opening.

5.6 Heater Element(s) – Replacement

1. Open the Front Service Panel – Refer to Section 5.3.
2. Ensure the unit is unplugged.
3. Note wiring connections to the heaters. Unplug the electrical connections to the heater(s).
4. Pull straight out on the Heater Element to remove.
5. Install new seals and ground rings to each new element. Apply a thin film of soap solution to lubricate the seals and fit the elements into position.
6. Attach the electrical connection(s) to each heater.

Service Tip:
Ensure the element is inserted under its retaining clip.

Retaining Clip Inside Suds Container

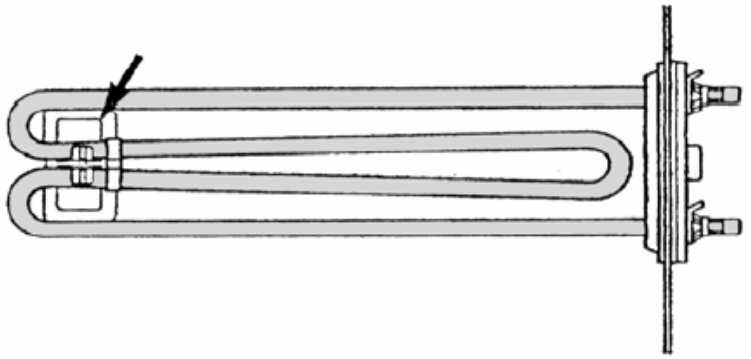


Figure 5-5: Heater Element

5.7 Inlet Valve – Replacement

1. Turn off the water supply to the appliance.
2. Remove the Water Inlet Hose from the Valve.
3. Remove the top cover from the appliance – Refer to Section 5.2.
4. Loosen the hose clamps.

Service Tip:
Ensure the hoses on the Cold Water Valve are re-connected in the correct locations – mark hoses as necessary.

5. Remove each hose (1 by 1) and attach to the new Valve.
6. Remove the screw(s) on the rear panel of the washer, lift old Valve Assembly from machine to remove.

5.8 Manual Draining and Filter Removal

Service Tip:
Even if the appliance does not appear to have water inside the drum area, typically 2 quarts of water can still be drained from the appliance via the Manual Drain. Always have a suitable container ready for the water.

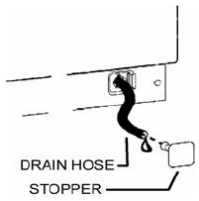
1. Open the Filter Access Door.
2. Place a suitable container underneath the Drain Tube.
3. Turn the Filter Cap counter clockwise 2 - 3 times. **Do not completely remove the filter**.

Service Tip:
In the event the container being used becomes filled, simply tighten the filter (clockwise) to stop the water flow. And repeat steps 2-3 until no more water drains from the tube.

Once the water stops flowing…

5. Continue turning the filter counterclockwise to remove.
6. Clean out any foreign objects or lint from the filter.
7. Check that the Drain Pump Impeller (in the back of the chamber) rotates freely by spinning with your hand.
8. Remove any detergent deposits, excess water etc...
9. Ensure the filter threads are clean, and place filter into position and secure by turning clockwise.

Service Tip:
On model W1930i use the Drain Hose and Stopper, located in the plinth area to manually drain the washer.



Caution!
Water drains from the hose immediately when the plug is removed. Pinch hose / connect the Stopper to stop the water flow.

5.9 Drain Pump – Replacement

1. Open the Front Service Panel – Refer to Section 5.3.
2. Manually drain all remaining water – Refer to Section 5.8.
3. Remove the filter – Refer to Section 5.8.
4. Disconnect the Electrical Connection on the Pump.
5. Refer to Figure 5-6. Release and slide the red catch (item 1) in the direction of the arrow and remove.
6. Twist the pump 900 to remove.

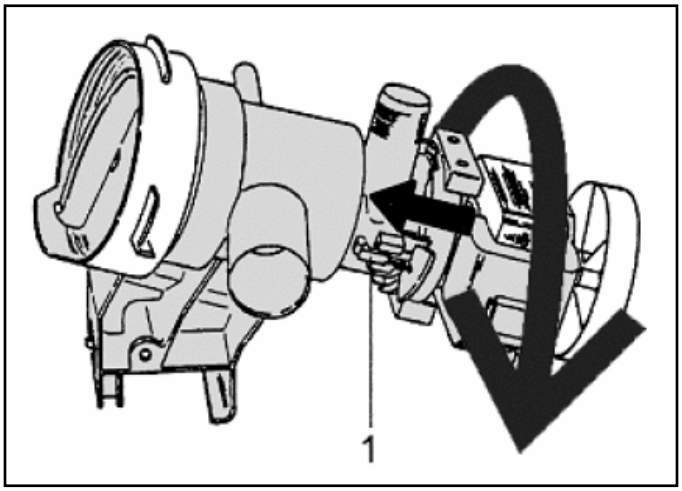
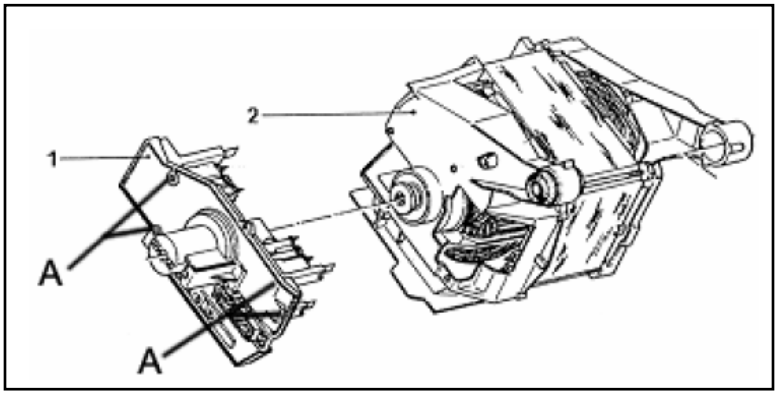


Figure 5-6: Drain Pump Removal

5.10 Main Motor – Carbon Brush Replacement



1. Open the Service Panel – Refer to Section 5.3.
2. Unscrew the Plastic Motor Cover.
3. Remove 4 screws from the Brush/Tachogenerator Module (A).
4. Pull module (Item 1) away from motor to remove.

Should the Tachogenerator or Overheat Protection Device require replacement, the entire module is replaced as a single component. Motor Brushes should always be replaced as a set (2 brushes).

Service Tip:
Before installing the module, press the brushes into their guides (they will be held by a retaining clip). Once the module is secured to the motor, release the brushes by pushing the brushes from behind with a small screwdriver or other suitable tool.

5.11 Control Electronic – Removal

Service Tip:
Make note / mark the position of the ribbon cables, as they can easily be installed in reverse (causing the appliance to malfunction).

1. Open the Service Panel – Refer to Section 5.3.
2. Refer to Figure 5-8. Disconnect the plug.
3. Remove the Ribbon Cable (Item 2) from its guide (Item 1) and disconnect it from the Electronic.
4. Remove the 3 screws (Item 3).
5. Remove the Electronic.

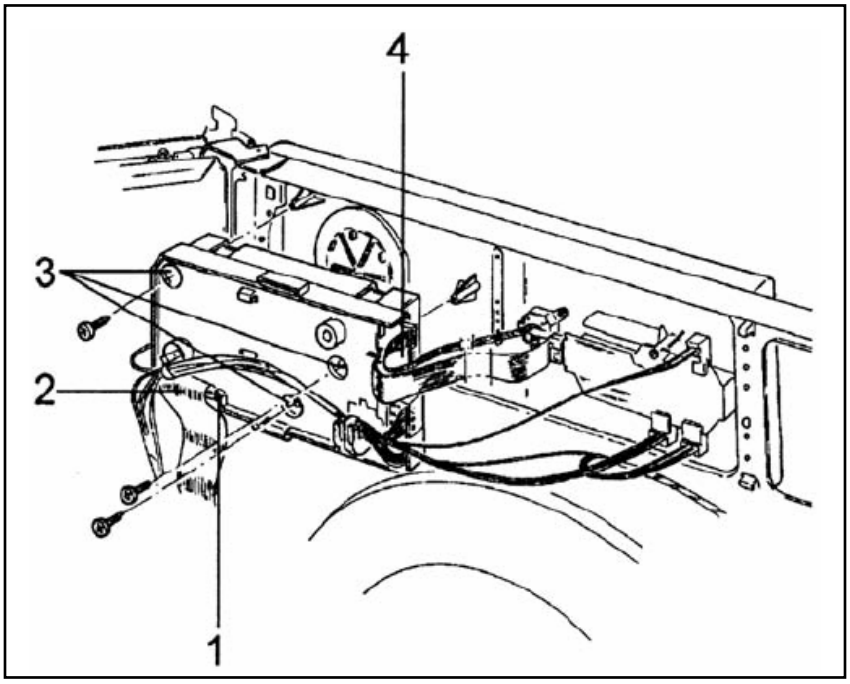


Figure 5-8: Removing Control Electronic

5.12 Power Supply Electronic - Removal

1. Open the front Service Panel – Refer to Section 5.3.
2. Refer to Figure 5-9. Use a screwdriver and release the Retainer Clip (Item 1).
3. Move the Electronic forward to release the retaining lug.

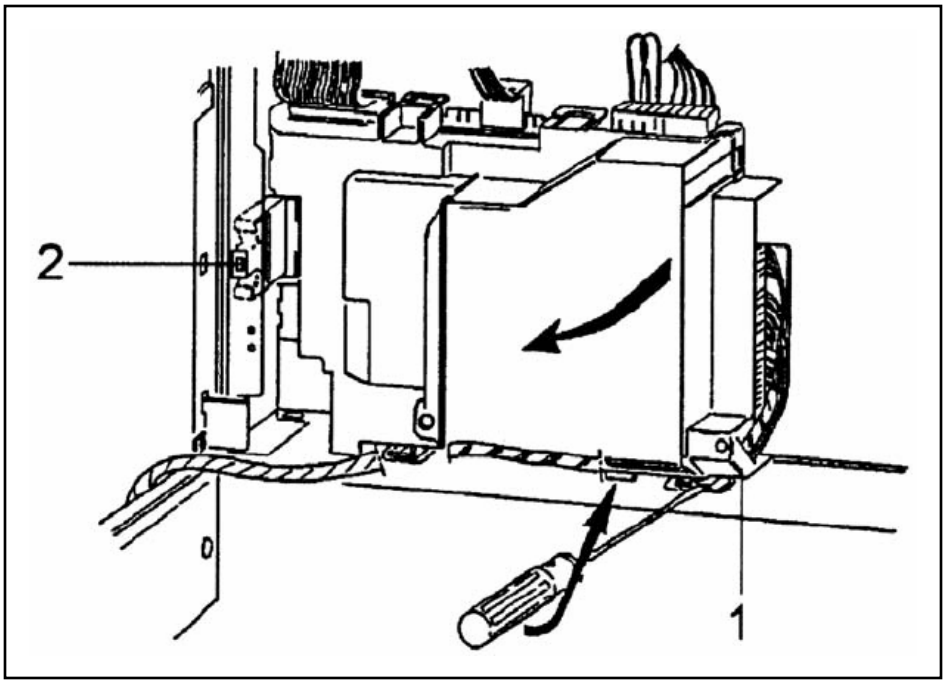


Figure 5-9: Removing the Power electronic

5.13 Determining Which Electronic Requires Replacement (Electronic Test Procedure)

Correct zero crossover point (NND) recognition is required by the microprocessor to provide a reference point for activating relays and thyristors. The zero crossover point of the sine wave is the basis for the time measurement of the microprocessor.

If the Electronic Unit fails to detect the zero crossover of 3 half waves of the AC power sine wave, a fault is registered and the microprocessor resets. The current program is cancelled and the LED's switch off. The appliance can only be restarted after switching it off and then back on; and selecting a program.

Because the possibility exists that either Electronic could present the same type of fault condition; the following procedure ensures the correct component is diagnosed / replaced.

Service Tip:
In the event the Control Electronic Unit or the Power Electronic Unit is suspected to be faulty, this procedure must be performed.

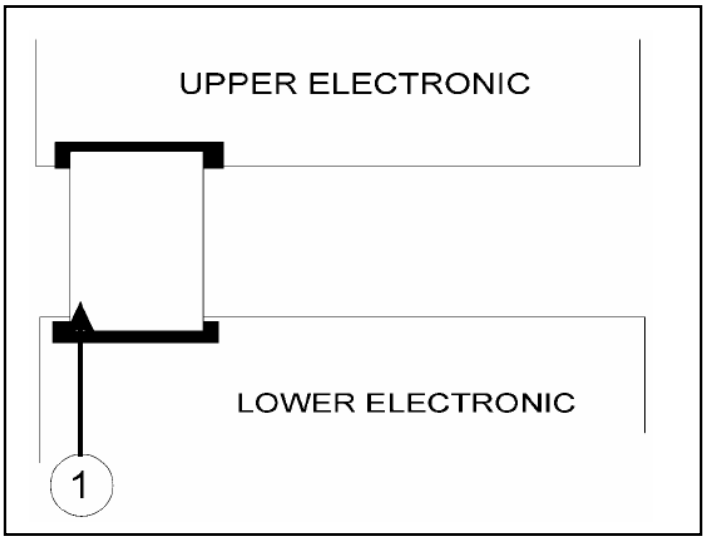


Figure 5-10: Ribbon Cable with Pin 1 Position Noted

W1918 /-30 /-26 /-66 /-86 Clothes Washers Electronic Check

1. Turn the appliance OFF.
2. Locate and unplug the ribbon cable connector from the Upper Electronic Board.
3. Close the Door.
4. Set the program selector to the START position.
5. Turn the appliance ON.
6. Ensure the Ribbon Cable is secured to the Lower Electronics, only.
7. Counting from left to right, locate pins 9 and 10 on the unplugged ribbon cable connector.
8. Measure the DC voltage between pins 9 and 10. Voltage from 4VDC to 6VDC is acceptable
9. Locate pins 12 and 13 on the unplugged ribbon cable connector.
10. Measure the voltage between pins 12 and 13. Voltage from 25VDC to 33 VDC is acceptable.

Are both voltages within tolerance?

YES
Lower electronic is OK

↓

NO

↓

Replace the Lower electronic

11. Turn the appliance **OFF**.
12. Reconnect the ribbon cable to the Upper Electronic.
13. Locate pins 10 and 11 on the Lower Electronic Ribbon Cable Connector.
14. Turn the appliance **ON**.
15. Measure the voltage between pins 10 and 11. Voltage from 1.4VDC to 2.4VDC is acceptable.

Is the voltage within tolerance?

YES

↓

Both Electronics are OK / Troubleshoot elsewhere.

NO

↓

Replace the Upper Electronic

5.14 Water Level Switch - Replacement

Note:
This procedure can only be performed on W1903, W1918, W1926 and W1930 clothes washers.

The W1966 and W1986 washer are equipped with a Level Switch integrated into the Control Electronic. The Level Switch cannot be replaced separately.

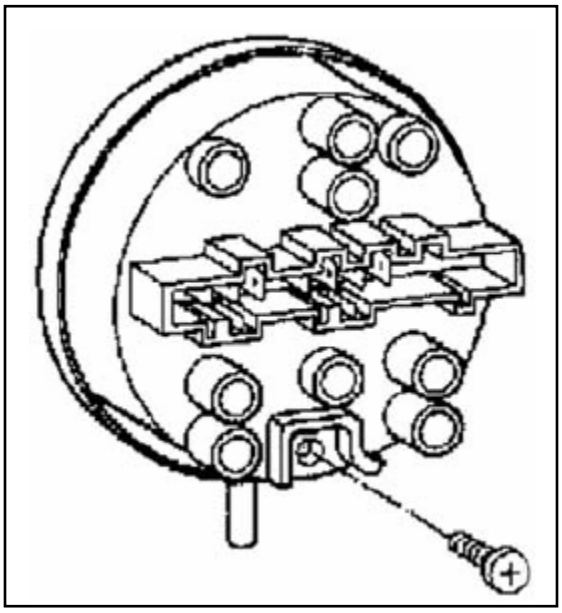


Figure 5-11: Water Level Switch

1. Open the Front Service Panel – Refer to Section 5.3.
2. Unplug the electrical connection from the Level Switch.
3. Remove the single retaining screw.
4. Lift the Level Switch away from the appliance.
5. Disconnect the Air Hose Connection at the bottom of the switch.

5.15 Heater Relays - Access

The Heater Relays are secured to single bracket. The bracket is secured to the frame near the 3 o'clock position of the drum.

1. Open the Front Service Panel – Refer to Section 5.3.
2. Remove the screw securing the bracket to the frame.
3. Pull the bracket away from the frame to access the relay(s).

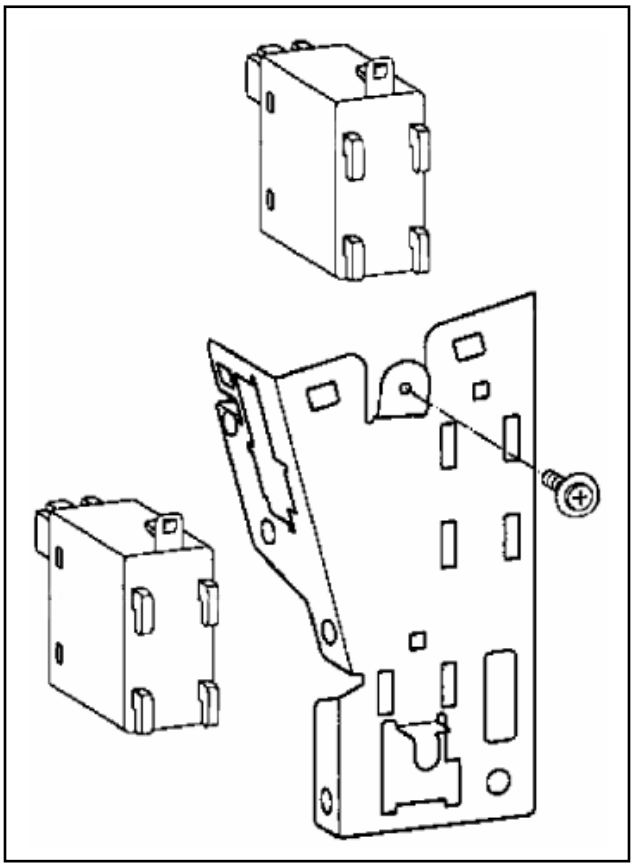


Figure 5-12: Heater Relays with Bracket

6.0 Fault Diagnosis

6.1 Service Mode - W1903, W1918, W1926 & W1930

Access

1. Turn off the machine. Close the Door.
2. Turn the Program Selector Switch to 12 o'clock.
3. Turn the unit on with the On/Off Switch.
4. Push the "Pre-Wash" Button in & out 3 times within 4 seconds.

Acknowledgement Indicator

Successful access into the Service Mode is indicated by a flashing "Pre-Wash" LED.

Navigation

Turn the Program Selector Switch to the desired position in accordance with the Table 6-1.

Selector Switch Position	Function	LED's
COTTONS 190 *COTTONS 170 on W1903*	Pre-Wash Valve (Y1) opens until water level 1 is reached. Heating to 95º then begins.	Main wash & Check Drain LED's are on.
COTTONS 180 *COTTONS 160 on W1903*	Main Wash Valve (Y2) opens until water level 3 is reached.	Rinse 1-2 & Drain LED's are on. *W1903: Rinse/Rinse & Hold LED's on*
COTTONS 155 *COTTONS 150 on W1903*	Main Wash Valve (Y2) and Rinse Valve (Y3) open until water level 3 is reached.	Rinse 3-4 & Faucet LED's are on. *W1903: Drain / Final spin & check Drain LED's are on.*
COTTONS 140	(not used)	Finish LED is on.
COTTONS 120	Drain Pump operates.	Drain & Faucet LED's are on. *W1903: Main wash & Check drain LED's are on.*
COTTONS 105	Drum rotates @ 55/40 rpm w/ reverse action.	Final Spin and Drain LED's are on. *W1903: Rinse / Rinse & Hold*
COTTONS 85	Drain Pump operates, drum spins to set spin speed on control panel (up to 1200rpm).	End & Faucet LED's are on. *W1903: Drain / Final spin & Check Drain LED's are on.*
PERM PRESS 140	Hot Water Valve (Y12) open *W1903: Does not apply – Cold water connection only*	Main Wash LED is on.

Table 6-1: Service Mode Functions (W1903, W1918, W1926 & W1930)

6.2 Service Mode - W1966 and W1986

Access

1. Switch Off the appliance. Close the Door.
2. Turn the Program Selector Switch to 12 o'clock.
3. Press and hold the Buzzer and Extended Buttons.
4. Switch On the appliance.
5. Release the Buzzer and Extended buttons.

Acknowledgement Indicator

Successful access into the Service Mode is indicated by a flashing "Pre-Wash" LED. (On the W1986 the display shows the microprocessor ROM ID code. Example: -08)

Navigation

Turn the Program Selector Switch to the desired position in accordance with the Table 6-2 – Service Mode Functions.

Selector Switch Program	Function
COTTONS 190	Water intake via Pre-Wash valve. Water reaches level 1 position then heaters are activated up to 95º F.
COTTONS 140	Water intake via the Main Wash valve until water level 2 is reached.
COTTONS 120	Water intake via the Rinse Valve until water level 3 is reached.
COTTONS 105	(Not Used)
PERMA PRESS 105	Water intake via Hot Water Valve.
COTTONS COLD	Drain Pump is activated.
PERMA PRESS 140	Drum rotates w/ reverse action.
PERMA PRESS 120	Drain pump operates, drum spins to set spin speed on control panel (up to 1200 rpm only).
WOOLENS 85	*See the Fault Code Retrieval / Clearing section 100 – 4.2 (next page)
DELICATES COLD	Buzzer activated.
DELICATES 85	LED flashing test.
DELICATES 105	Operating hours in blocks of 3. (Example: 9423 hours would be shown as "009" then "423") Note: Applies to W1986 only.

Table 6-2: Service Mode Functions (W1966 & W1986)

6.3 Fault Codes

Applies Only to Models W1966 & W1986

Retrieval

1. Access the Service Mode – Refer to Section 6.2.
2. Turn the Program Selector Switch to the WOOLENS 85 position.
3. Use table 6-3 to determine the stored fault

On the W1966 note the status of the LED Indicators

On the W1986 the fault is displayed in the “Time Remaining” Display Window (Example: F1)

W1966 LED Status	W1986 Display	Fault
-	Cor	No Faults Stored
Pre-Wash LED Flashes Faster	F1	Pressure Sensor Fault
Main Wash LED Flashes	F2	NTC Sensor Fault
Rinse LED Flashes	F3	Heating Fault
Rinse/Hold LED Flashes	F4	Tachogenerator Fault
Oversuds LED is on	F5	Oversuds Condition Logged
Water Intake LED is on	F6	Water Intake Fault
Check Darin LED Flashes	F7	Water Drainage Fault
(to be updated)	F8	No Final Spin
(to be updated)	F9	NV RAM Fault

Table 6-3: Fault Codes (W1966 & W1986)

Clearing a Stored Fault Codes

1. Access the Service Mode
2. Place the Program Selector Switch to the WOOLENS 85 position (Fault Code Retrieval position).
3. While a fault is displayed – Switch off the appliance.

6.3.1 Fault Code – Definitions (W1966 & W1986 Only)

F1: Water Level Switch Fault

- Check the hose to the to the Level Switch
- Clean / Check the Air Trap
- Check the Control and Power Modules (pressure sensor option) in the Service Mode.

F2: The NTC Temperature Sensor Circuit Contains an Open or Short Circuit.

- Check the NTC Temperature Sensor for an open or short circuit.
- Check the NTC Temperature Sensor wiring and connections for an open or short circuit.
- Check the NTC Temperature Sensor Resistance – Refer to Section 4.6.

F3: Heating Failure

- Check the heating control and power circuits for proper operation.
- Check Heater Relay(s) for proper operation.
- Check Heater Element(s).
- Check the Electronics.

F4: The Drum and Drives are Not Moving (as determined by the Tachogenerator).

- Check drum and drives for free movement and operation.
- Check the Tachogenerator circuit.
- Check the Main Motor for proper operation

F5: Oversuds Condition

Excess foam is registered in the main wash or when rinsing as follows...

- <u>During Cottons Programs:</u>
  - Level 140 mm wc is detected in the main wash.
  - An additional rinse cycle is activated due to excess foam.
  - During the rinse spin after the main wash or the first rinse cycle, the spin speed is reduced due to the presence of an excess water-foam mixture.

- <u>During Minimum Iron Programs:</u>
  - Level 140 mm wc is detected in the main wash. The Oversudsing LED continues to flash until the Program Selector Switch is turned to Finish.

- Check for Improper type or amount of detergent being used.

F6: Insufficient Water Intake

- Check water supply is fully opened.
- Clean the Water Intake Filters.
- Check supply water pressure.
- Check Intake Valves - as necessary.
- Check / adjust the appliance programming.

F7: Insufficient Drainage

- Check filter for blockages.
- Check Drain Hose.
- Check Drain supply (at install location) for proper draining.
- Check Drain Pump (mechanical / electrical).
- Check Non-Return Valve.

F8: Spin Speed Not Maintained

During the last 2 seconds of the final spin, the spin speed must be > 400 rpm. If this is not the case, the fault code F8 is then stored.

- Minimize imbalances by opening the door & redistributing the laundry by hand. Repeat the spin.

Note:
With small load quantities, it may be necessary to add additional items as ballast.

F9: NV RAM (non-volatile RAM) Fault

- Perform the "Determining Which Electronic Unit Requires Replacement (Electronic Test Procedure)" – Refer to Section 5.13.

6.4 Programming Mode

Applies Only to Models W1966 & W1986

Access
1. Turn off the machine. Close the Door.
2. Turn the Program Selector Switch to 12 o'clock.
3. Press and hold the Buzzer and Sensitive Buttons.
4. Turn the unit on with the On/Off Switch.
5. Release the Buzzer and Sensitive Buttons.
6. Push the "Pre-Wash" Button in & out 3 times within 4 seconds.

Acknowledgement Indicator
Successful accessing of the programming mode is indicated by flashing Pre-Wash and Main Wash LED's. "P 0" appears in the digital display only on the W1986.

Navigation
Turn the Program Selector Switch to the desired position in accordance with the data contained in Table 6-4 – Programming Mode Functions for W1966 & W1986.

To change the Programming Values
1. Press the Start Button to toggle between the available options.
2. To store the setting and quit - Turn off the appliance.

Warning!
To avoid uncontrollable appliance operation - Do not under any circumstances adjust any function that includes the "Not Used" or "Do Not Change" notations in tables 6-4 and 6-5.

W1966 & W1986 Programming Chart						
Program #	Program Selector Switch Position	Program Function	Options	Default Setting	W1966 and/or W1986 Displayed LED's	W1986 Digital Display
P1	Delicates 105	Rinse Level	Enable – Automatic Rinse Feature	X	<none>	0
			Not Used		Rinses	1
P2	Delicates 85	Water Level	Not Used		<none>	1
			USA	X	Rinse Hold	2
			Not Used		Drain	3
			Not Used		Final Spin	4
P3	Delicates Cold	Water Intake	60 seconds / normal water pressure	X	<none>	0
			255 seconds / low water pressure		Rinses	1
P4	Silks	Model Number	W1986	X	Rinses	1
			Not Used		Rinse Hold	2
			Not Used		Drain	3
			Not Used		Final Spin	4
			W1966	X	Anti-Crease/End	5
P5	Woolens 105	Heater Rating	Not Used		Rinses	1
			Not Used		Rinse Hold	2
			Not Used		Drain	3
			USA 2.6kW	X	Final Spin	4
P6	Woolens 85	Soak Button	Soak Action Performed	X	<none>	0
			Gentle Action Performed		Rinses	1
P7	Woolens •	Soak Duration*1	120 minutes on W1966	X	Rinses	1
			90 minutes on W1966		Rinse Hold	2
			60 minutes on W1966		Drain	3
			30 minutes on W1966		Final Spin	4
P8	Jeans	Country	USA	X	<none>	0
			Not Used		Rinses	1

Table 6-4: Programming Mode Functions for W1966 & W1986 (Continued on Table 6-5)

W1966 & W1986 Programming Chart						
Program #	Program Selector Switch Position	Program Function	Options	Default Setting	W1966 and/or W1986 Displayed LED's	W1986 Digital Display
P9	Dress Shirts	Gentle Action	Without always using gentle action	X	<none>	0
			Always use gentle action		Rinse	1
P10	Starch	Suds Cooling	Suds Cooling Disabled (OFF)	X	<none>	0
			Suds Cooling Enabled (ON)		Rinses	1
P11	Fine Rinse	Memory Function	Without function	X	<none>	0
			Enable Memory Function		Rinses	1
P12	Drain / Spin	Rinse Temperature	Cold Rinses	X	<none>	0
			Hot Rinses	X	Rinse Hold	2
P13	Perm Press Cold	# of LED's	4 (door lock, o-suds, drain & intake)	X	<none>	0
			Not Used		Rinses	1
P14	Perm Press 105	Country Setting	Not Used		Rinses	1
			USA	X	Rinse Hold	2
			Not Used		Drain	3
			Not Used		Final Spin	4
P15	Perm Press 120	Load Control	Automatic ON	X	<none>	0
			Automatic OFF		Rinses	1
P16	Perm Press 140	Switch Surround	Illumination OFF		<none>	0
			Illumination ON	X	Rinses	1
P17	Cottons Cold	Water Control	USA with Solenoids	X	<none>	0
			Not Used		Rinses	1
P18	Cottons 105	Program Allocation	Not Used		Rinses	1
			Not Used		Rinse Hold	2
			USA Hydromatic IV B 1	X	Drain	3
			Not Used		Rinses	4

Table 6-5: Programming Mode Functions for W1966 & W1986 (Cont. from Table 6-5) (Cont. on Table 6-6)

W1966 & W1986 Programming Chart						
Program #	Program Selector Switch Position	Program Function	Options	Default Setting	W1966 and/or W1986 Displayed LED's	W1986 Digital Display
P19	Cottons 120	Spin Speed	Not Used		Rinses	1
			Not Used		Rinse Hold	2
			Not Used		Drain	3
			USA 1200/900/600/400	X	Final Spin	4
			Not Used		Anti-Crease/End	5
P20	Cottons 140	Buzzer	USA only (cannot be changed)	X	<none>	0
P21	Cottons 190	(To be updated)	USA	X	Rinses	1
			Not Used		Rinse Hold	2
			Not Used		Drain	3
			Not Used		Final Spin	4
			Not Used		Anti-Crease/End	5

Table 6-6: Programming Mode Functions for W1966 & W1986 (continued from Table 6-5)

6.5 Description of Programmable Options

Several programmable options exist for some of the functions in the Programming Mode.

Warning!
To avoid uncontrolled appliance operation any programmable option marked "DO NOT CHANGE" (in the descriptions below) should never be set to any optional values / settings. The data provided is for informational purposes only.

The following is a description of each function, the appropriate knob position and a brief explanation of each setting:

RINSE LEVEL (Delicates 105)
The amount of water used for the rinse cycles depends on the amount of water used during the first fill. At the beginning of the program the water valve is opened until the first water level is registered. As the laundry absorbs water, the water level drops. To maintain the original water level

the intake valve is opened again. This continues until the laundry cannot absorb any more water. The absorbing times and the valve switching times are parameters being used to establish a provisional loading level. The amount of water used for the rinse cycles is in conjunction with the loading level established at the first fill. DO NOT CHANGE.

WATER LEVEL (Delicates 85)
This programs the function performed when the Sensitive option is selected via the Control Panel. The default setting adds extra water to the main wash and rinse cycles of a program to thoroughly wash away detergent scent and allergens. This option is available in the following programs: Cottons / Permanent Press / Jeans / Dress Shirts and Silk. DO NOT CHANGE.

WATER INTAKE (Delicates Cold)
The optional setting allows for additional water intake monitoring time. It will change this time from 60 seconds to 255 seconds. If the Hot Water Valve (Y12) is opens and the first water level is not registered within 30 seconds, Y12 closes and the Cold Water Valve Y1 opens. If no water level is registered after 60 seconds the buzzer sounds and the LED Water intake starts flashing.

PROGRAMMING MODEL NUMBER (Silks)
If an electronic unit needs to be replaced it must be programmed to match the model number of the appliance. Two models numbers are available in USA and Canada (W1966 and W1986) the Electronic should be programmed only to the exact model number it is installed in.

HEATER RATING (Woolens 105)
The washer can be equipped with a variety of Heating Elements. For the USA and Canada the Heating Elements are 2x1300 Watts and should be programmed accordingly. DO NOT CHANGE.

SOAK BUTTON (Woolens 85)
This programs the function performed when the Soak option is selected via the control panel. The default setting allows a soak action to be performed when the soak button is pressed. The optional setting programs the button as Gentle Wash instead.

SOAK DURATION (Woolens)
W1966: Programs the soak time duration – applies only if the user selects the soak option. Default setting is 120 minutes.

W1986: Does not apply - DO NOT CHANGE.

COUNTRY SETTING (Jeans)
This does not apply to USA model machines. DO NOT CHANGE.

GENTLE ACTION (Dress Shirts)
With this function activated, gentle action wash rhythms are performed instead of original set wash rhythms. A reduced drum movement and a longer rest period while reversing, gently washes lightly soiled fabrics. The default setting for this function is: Without Always Gentle Action.

SUDS COOLING (Starch)
The temperature of the drain water in the Cottons very hot program can be reduced with the addition of cool water at the end of the main wash. This option may be chosen if the drain-line is connected to old plumbing, plastic drainpipe systems, or is required by code.

MEMORY (Fine Rinse)
The memory feature recalls the selection of a wash options and / or spin speed selections to a wash program. The next time the program is selected, the previously chosen options and / or spin speed selections will also be selected.

RINSE TEMPERATURE (Drain/Spin)
After the main wash, the washer rinses with cold water in up to three rinse cycles. With the hot water option selected, hot rinses are activated in Cottons and Minimum Iron Programs. Rinse two is skipped and rinses one and three are carried out with hot water.

 # OF FAULT LED's (Perma Press Cold)
The Fault Indication LED's are located at the lower right side on the control panel. The number of fault LED's present determines the setting in this function. Both the USA W1966 and W1986 are equipped with 4 LED's therefore this value should not be changed. DO NOT CHANGE.

COUNTRY (Perma Press 105)
The wash programs can be customized to suit the needs and habits in different countries. The default setting is for USA, and should not be adjusted. DO NOT CHANGE.

LOAD CONTROL (Perma Press 120)
This does not apply to USA model machines. DO NOT CHANGE.

ILLUMINATED PROGRAM SELECTOR SWITCH (Perma Press 140)
When the machine is switched on the Program Selector is illuminated and remains lit for 5 minutes after the program has finished. If no program is selected after the machine is switched on, the illumination goes off after five minutes. When any button is pressed or the Program Selector is used the switch is illuminated again. This option allows the illumination to be turned off.

WATER CONTROL (Cottons Cold)
The Electronic can be programmed for two different Water Intake Systems. The USA version uses solenoids and should not be changed. Changes to this value may result in a non controllable water flow condition (i.e. flooding condition). DO NOT CHANGE.

PROGRAM SWITCH SETTING ALLOCATION (Cottons 105)
This function allows for different programming of the wash cycle times and cycle positions of the Selector Knob. The default setting is for the USA Hydromatic IV B1. DO NOT CHANGE.

SPIN SPEEDS (Cottons 120)
USA and Canadian version only allow a setting up to 1200 rpm. DO NOT CHANGE.

BUZZER (Cottons 140)
Setting for Buzzer activation. Does not apply to US models. DO NOT CHANGE.

6.6 Special Features

6.6.1 Electronic Program Lock

The Program Lock prevents the washer from being opened or the program from being changed while the current program is running.

Activating the Program Lock
Once the wash program has started, hold the START Button until the Door Lock Indicator illuminates. The washer's program can no longer be changed. At the end of the currently running program the Program Lock is automatically cleared.

To cancel the Program Lock
Hold the START Button until the Door Lock Indicator goes out.

6.6.2 Child Safety Lock

The Child Safety Lock (when activated) disables the Door Switch and ignores the position of the Program Selector Knob. The door cannot be opened, a program cannot be selected and the appliance cannot be operated.

To activate the Safety Lock
1. Close the door.
2. Turn the Selector Switch to the 12 o'clock position.
3. Turn on the washer.
4. Press / hold the Heavy Soil Button during steps 5 to 7.
5. Slowly turn the Program Selector clockwise to the COTTONS/140 position.
6. Slowly turn the Program Selector counterclockwise to the 12 o'clock (End) position.
7. Slowly turn the Program Selector counterclockwise to the DELICATES/cold position. The Door Lock Indicator (lower right of control panel) flashes.
8. Release the Heavy Soil Button.
9. Turn the Program Selector to the 12 o'clock position.
10. Turn the washer off.

To deactivate the Safety Lock
Perform steps 4 through 10 above, the Door Lock Indicator turns off.

6.6.3 Demonstration Mode

The Demonstration Mode is commonly used in Show Rooms to simulate an active program; by illuminating the LED's and changing the remaining program time (W1986 only) in the display.

To activate the Demonstration Mode

1. Open the door and leave it open throughout the demonstration period.
2. Turn off the machine.
3. Turn the Program Selector Switch to the 12 o'clock position.
4. Press and hold the Start Button while turning the unit on.
5. As soon as the Rinses LED flashes, release the Start Button.
6. Turn the Program Selector Switch to Cottons 1200.

Successful accessing of the Demonstration Program is indicated by the Rinses LED flashing & the Program Selector Switch lights up.

The Demonstration Program duration is 67 seconds. After a pause of 30 seconds the Demonstration Program will start over again.

To Interrupt the Demo Mode
Turn the Program Selector Switch to the 12 o'clock position.

To Continue the Demo Mode
Turn the Program Selector Switch to any position, other than 12 o'clock.

To cancel the Demo Mode
Turn off the machine.

To run the Demo Mode again
Turn on the machine.

Quit (without saving)
With the machine turned on, close the door.

6.7 Fault Indicators

The following functions are monitored automatically for correct operation by the control system. Specific LEDs illuminate in accordance with Tables 6-7 to 6-10 to display the fault. The following systems are monitored:

- Attempted change of program w/ Child Safety Feature active.
- Level Switch fault.
- Heating fault.
- NTC Sensor fault.
- Tachogenerator fault.
- Data transfer fault between microprocessor and NVRAM (memory).
- Inappropriate Spin Speed Selector Switch setting.
- Final Spin not performed.
- Water Intake fault.
- Water Drainage fault

Indicator	Information
"ON" LED flashes	With the Child Safety Feature activated; an attempt has been made to change the program more than 3 minutes after the appliance was started.
"Soak/PreWash" LED flashes	The connection via GND between the Level Switch and the Control Module is open circuited. All machine components and functions, including the Door Switch, are made inoperative when this fault is registered. Only the Drain Pump can be activated. The program continues when correct functioning of the Level Switch is detected.
"Main Wash" LED flashes	An open or short circuit within the NTC Sensor Circuits has been detected. The heating is switched off, however the program will continue. If the fault is no longer being detected, the indication is cancelled automatically. OR The selected temperature is not reached during the allotted time (i.e. defective Heater Element or relay). The program will continue.

Table 6-7: Fault Indicators (Continued on Table 6-8)

Indicator	Information
"Rinses 1-2" LED flashes	The Tachogenerator connections are open or short circuited. The motor is switched off within 1.5 seconds. Another attempt is made to start the motor at the next reversing phase, but it will stop if the conditions still exist. OR The Drive Motor does not start with 1.5 seconds due to open wiring in the motor circuit, defective brushes, etc…
"Rinse 3" LED flashes	A Control Module fault has been detected. This fault is indicated immediately when the appliance is switched on.
"Rinse Hold" LED flashes	Operational error. The operator has selected "Rinse Hold" with the Spin Speed Selector Switch and then set the program Selector Switch to "Spin". The flashing "Rinse Hold" LED indicates that this contradictory setting must be changed. See the Operating Instructions for further details.
"Final Spin" LED flashes	In the last 2 seconds of the final spin, the spin speed must be > 400 rpm. If this is not the case the "Final Spin" LED flashes, however the program continues.
"Water Inlet Check" LED flashes	Water Intake Failure. The Water Inlet System is time controlled. If the correct water level is not registered by the Level Switch in the allotted time, the fault will be indicated as follows: • The LED flashes if water level 1 has not been reached after 2 minutes. • If the correct water level has still not been reached in 4* minutes, the Inlet Valves are closed and the program is cancelled. A 90 second drain is then initiated and the LED remains flashing until the program has stopped. Note: the water level can be extended on certain models, refer to the model specific Operating Manual for further details.

Table 6-8: Fault Indicators (Continued from Table 6-7, Continued on Table 6-8)

Indicator	Information
“Water Drain Check” LED flashes	Water Drainage Failure. The water level is monitored by the Water Level Switch to ensure the Drain System is operating. Drainage is monitored as follows: If the preset water level setting is still present after 75 seconds of drainage, the “Water Drain Check” LED flashes, however the program continues. If water level one (1) is still present after 5 minutes of drainage, the program is cancelled.

Table 6-9: Fault Indicators (Continued from Table 6-8) (Continued on Table 6-10)

Additional Fault Indicators – W1966 & W1986 only	
"Door Lock" LED flashes	The lock function has been activated. Deactivate the lock function to clear.
"Check Drain" LED flashes Buzzer sounds and "- - -" appears in the display. (W1986 only)	Water Drainage Failure
"Water Intake" LED flashes Buzzer sounds and "- - -" appears in the display. (W1986 only)	Water Intake Failure
"Pre-Wash" OR "Rinse" LED Flashes Buzzer sounds and "- - -" appears in the display. (W1986 only)	Check for stored faults in the Service Mode.
"Oversudsing" LED is ON	An oversudsing condition is present. 1. Run a drain cycle. 2. Ensure the correct type and/or amount of detergent is being used.
"Anti-Crease" LED flashes	The Program Selector Knob has been moved after a program was started. Turn the Selector Knob back to the originally selected program position to clear.

Table 6-10: Fault Indicators (Continued from Table 6-9)

6.8 Porthole Door is locked / unable to access service door

The Washer Door will not open if

- The Drum is moving
- Faulty Water Level Switch
- Faulty Door Lock or Switch

To open the door

1. Drain the unit by turning the Selector Switch to Drain. If the water does not drain, manually drain the unit (see Section 5.8 Manual Draining and Filter Removal).
2. Locate the Manual Release and pull down.

6.9 Customer reports water leaks from front left side of the appliance.

The incorrect type; or amount of detergent may be being used by the operator of the appliance.

The excess suds may travel upward from the Drum Assembly toward the Detergent Dispenser Drawer. As the suds are exposed to the atmosphere a condensing effect occurs. The condensed suds drip downward and may appear as leakage in terms of a description from a customer.

1. Examine the dispenser area and dispenser concertina hose for signs of over-sudsing. (i.e. traces of detergent and signs of flow down exterior of hose and/or frame areas)
2. Ensure the correct type and amount of detergent are used
3. Perform re-training as necessary.

6.10 W1966 & W1986 not functioning correctly, after Control Electronic Replacement

The Electronic is not programmed correctly

1. To reprogram the Electronic – refer to the Programming Mode Section in this book for programming information.

6.11 W1900 series not functioning correctly, after Control Electronic Replacement

The Ribbon Cable Connections were accidentally installed backwards.

1. Install the cable connections correctly.

INITIAL: 3/23/2007 E.S.